MPT 1352

Test schedule for the approval of radio units to be used with commercial trunked networks operating in Band III sub-bands 1 and 2

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Firms intending to manufacture equipment which complies with the specification should be aware that certain features of the specification are subject to IPR claims.

All firms are therefore advised that they should make appropriate enquiries through their Patent Agents before proceeding.

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SCOPE

This specification contains the type approval requirements for radio units which are required to conform to MPT 1343.

1. INTRODUCTION

1.1 Purpose of these Tests

The tests contained in this specification have been designed with the intention of establishing that the radio units will operate correctly with the infrastructure equipments conforming to MPT1347.

For sub-band 1 the radio units operate over the radio frequency band 185.2125 MHz to 191.4875 MHz (radio unit transmit band) and 177.2125 MHz to 183.4875 MHz (radio unit receive band).

For sub-band 2 the radio units operate over the radio frequency band 193.2125 MHz to 199.4875 MHz (radio unit transmit band) and 201.2125 MHz to 207.4875 MHz (radio unit receive band).

The nominal channel separation between adjacent carrier frequencies shall be 12.5 kHz. Further, as described in MPT1343, all radio units include certain basic facilities and properties in a standard manner, whilst certain other optional facilities and properties are permitted only if provided in a standard manner to ensure ready transfer from network to network. Any given radio unit need only meet those requirements that are mandatory and those appropriate to the standard options included in the unit.

1.2 Other Relevant Specifications and Documents

This section describes the specifications and documents that are associated with the trunking scheme adopted for use in sub-bands 1 and 2 of Band III in the United Kingdom. The following specifications and documents must be taken together to describe the overall trunking systems.

MPT1317 (1981)	Code of practice for the transmission of digital information over land mobile radio systems
MPT1318 (1986)	Engineering memorandum: Trunked systems in the land mobile service
MPT1323 (1986)	Angle modulated radio equipment for use at base and mobile stations in the private mobile radio service operating in the frequency band 174-225 MHz
MPT1327 (1988)	A signalling standard for trunked private land mobile radio systems
MPT1331 (1987)	Code of Practice for radio site engineering
MPT1343 (1988)	System interface specification for radio units to be used with commercial trunked networks operating in Band III sub-bands 1 and 2
MPT1347 (1988)	Radio interface specification for commercial trunked networks operating in Band III sub-bands 1 and 2

Throughout this specification the tests are numbered in accordance with the section in which they fall and also give guidance on the required state of the radio unit under test. This is achieved within the structure of the test number itself. All tests are numbered as follows:

Sssnnc

Where

S is the MPT1352 major section number in which the test is defined.

ss is the MPT1352 minor section number in which the test is defined.

nn is a number which forms a simple incremental count of tests within the section referred by Sss.

c is one of the following alphanumeric characters defined as follows:

A requires personality A to be operational (see section 3). In some cases the personality may be left undefined.

B requires personality B to be operational (see section 3).

X requires that the radio be set into the manual mode.

Y notes that the test is continuous.

1. In this specification the radio unit under test is required to operate with two different personalities. It must also operate in the manual mode. Since it is mandatory that radio units can migrate between networks conforming to MPT1347 by personality change (see 3.3 of MPT1343) all tests must be carried out on a single radio unit.

2. The organisation seeking type approval shall furnish the Tester with all the equipment and information necessary to perform the personality changes. Such changes may entail hardware and/or software modification to the radio unit. Any hardware modification shall be minor in nature. e.g., replacement of one or two integrated circuits.

3. ITEMS TO BE SUPPLIED PRIOR TO TEST

This section outlines the arrangements and previously prepared information needed for the type approval tests.

Radio Units shall be presented for type approval with at least the five sets of personality information noted in this specification (section 3.1 and 3.2.) prepared. This shall either be already included in the unit or arrangements shall be made to ensure a speedy change at the appropriate stage in the tests.

The tests listed in this specification shall normally be conducted with the radio until set to operate with personality "A". Then, when it is required to establish the ability of the radio unit to migrate to another network, the operating personality shall be changed to "B". The majority of the tests are then repeated using this second personality.

Network operator classification tests are conducted with the radio unit set to operate with personality "C" or "D". In order to conduct tests for time-shared operation, the radio unit shall be set to operate with personality "E".

For some tests it is necessary that this "default" information is changed to conduct the test. This is descried in section 3.3. more fully.

There is no limit to the number of personalities that a radio unit may have.

3.1. Network Parameters

All radio units operating in a MPT 1327 trunked environment must have pre-programmed information on the "network" on which they are to make calls. In addition to the values assigned to the MPT 1327 system variables in Appendix B of MPT 1343 the following parameters must have values assigned or a statement made to the effect that the relevant facility is not implemented and that appropriate measures have been taken (see 3.5.2.).

3.1.1. Acquisition Authorization Data

A,C,D,E			B		
1.	'001'	Zone	1.	'000'	Area
2.	'0100010'	Area	2.	'001'	Area
3.	'0100100'	Area	3.	'010'	Area
4.	'0100110'	Area	4.	'011'	Area
5.	'0101000'	Area	5.	'100'	Area
6.	'0101010'	Area	6.	'101'	Area
7.	'010110000'	Full Code	7.	'1100'	Full Code
8.	'011001010'	Full Code	8.	No Entry Listed	

3.1.2. Zone Sub-Field Length (LZ)

A,C,D,E = 3 bits B = 0 bits

3.1.3. Area Sub-Field Length (LA)

A,C,D,E = 7 bits B = 3 bits

3.1.4. Network Identity Code

A,C,D,E (Net) = '01' B (OPID) = '0010100'

3.1.5. Lowest Channel Number in the Network

A,C,D,E = 58 B = 157

3.1.6. Highest Channel Number in the Network

A,C,D,E = 560 B = 366

3.1.7. Size of the Normal Hunt

A,C,D,E = 32 channels B = 20 channels D = 3 channels

3.1.8. Normal Hunt Channel Numbers

The CHAN/CONT values correspond to Band III Sub Band 2. For Band III Sub Band 1, replace the leading binary digit '0' by '1'.

	A,E	CHAN/CONT VALUE	B	CHAN/CONT VALUE
*1	58	'0000000001'	157	'0001100100'
2	62	'0000000101'	160	'0001100111'
3	64	'0000000111'	163	'0001101010'
4	77	'0000010100'	166	'0001101101'
5	79	'0000010110'	169	'0001110000'
6	85	'0000011100'	172	'0001110011'
7	87	'0000011110'	175	'0001110110'
8	107	'0000110010'	178	'0001111001'
9	117	'0000111100'	181	'0001111100'
10	120	'0000111111'	247	'0010111110'
11	123	'0001000010'	254	'0011000101'
12	126	'0001000101'	281	'0011100000'
13	129	'0001001000'	284	'0011100011'
14	132	'0001001011'	287	'0011100110'
15	135	'0001001110'	290	'0011101001'
16	138	'0001010001'	293	'0011101100'
17	177	'0001111000'	357	'0100101100'
18	180	'0001111011'	360	'0100101111'
19	186	'0010000001'	363	'0100110010'
20	189	'0010000100'	366	'0100110101'
21	217	'0010100000'		
22	219	'0010100010'		
23	258	'0011001001'		
24	278	'0011011101'		
25	282	'0011100001'		
26	286	'0011100101'		

27	358	'0100101101'
28	361	'0100110000'
29	364	'0100110011'
30	367	'0100110110'
31	372	'0100111011'
32	377	'0101000000'

* Table location 1 (channel Number 58) shall have its time shared bit set for personality 'E'.

3.1.8a Normal Hunt Channel Numbers

	C	CHAN/CONT VALUE	D	CHAN/CONT VALUE
1	58	'0000000001'	58	'0000000001'
2	62	'0000000101'	286	'0011100101'
3	64	'0000000111'	560	'0111110111'
4	77	'0000010100'		
5	79	'0000010110'		
6	85	'0000011100'		
7	87	'0000011110'		
8	107	'0000110010'		
9	117	'0000111110'		
10	120	'0000111111'		
11	123	'0001000010'		
12	126	'0001000101'		
13	129	'0001001000'		
14	132	'0001001011'		
15	135	'0001001110'		
16	138	'0001010001'		
17	177	'0001111000'		
18	180	'0001111011'		
19	186	'0010000001'		
20	189	'0010000100'		
21	217	'0010100000'		
22	219	'0010100010'		
23	258	'0011001001'		
24	278	'0011011101'		
25	282	'0011100001'		
26	286	'0011100101'		
27	258	'0100101101'		
28	361	'0100110000'		
29	364	'0100110011'		
30	367	'0100110110'		
31	372	'0100111011'		
32	560	'0111110111'		

3.1.9. Non-Applicable Channel Numbers in Comprehensive Hunt

There are no non-applicable channel numbers.

3.1.10 Suppression of the Comprehensive Hunt

A = No B,C,D,E = Yes

3.1.11. Value of the Home Zone

A,C,D,E = '010' B = Not Applicable

3.1.12. Value of INFO in RQR

A,B,C,D,E = 0

3.1.13. Fall Back Channel

Not tested in this issue.

3.1.14. Value of NDD in SYS Code if Fall Back is Fitted

Not tested in this issue.

3.1.15. Value of NC1

Channels with TSI = 0
A,C = 30 codewords B = 2 codewords D = 20 codewords
Channels with TSI = 1
E= 67 codewords

3.1.16. Value of NC2

Channels with TSI = 0
A,C = 32 codewords B = 17 codewords D = 10 codewords
Channels with TSI = 1
E = 67 codewords

3.1.17. Value of NT (include Calls Only)

A,C,D,E = 206 bit periods B = 309 bit periods

3.1.18. Value of NV

Channels with TSI = 0
A,C,D = 1 CCSC B = 1 CCSC
Channels with TSI = 1
E = 1 CCSC

3.1.19. **Value of NX1**

Channels with TSI = 0
A,C = 2 codewords B = 1 codeword D = 18 codewords
Channels with TSI = 1
E = 52 codewords

3.1.20. **Value of NX2**

Channels with TSI = 0
A,C = 3 codewords B = 2 codewords D = 9 codewords
Channels with TSI = 1
E = 52 codewords

3.1.21. **Value of NZ1**

A,B,C,D,E = 1 sample

3.1.22. **Value of NZ2**

A,C,E = 4 samples B,D = 2 samples

3.1.23. **Value of TC**

A,C,D,E = 60 sec B = 30 sec

3.1.24. **Value of TD**

A,C,D,E = 5 min B = 0

3.1.25. **Value of TJ**

A,C,D,E = 20 sec B = 30 sec

3.1.26. **Value of TN**

A,C,D,E = 7 sec B = 3 sec

3.1.27. **Value of TS**

A,C,E = 5 sec B = 10 sec D = 2 sec

3.1.28. **Value of TT**

A,C,D,E = 60 sec B = 10 sec

3.1.29. Pressel Messages

If the radio unit manufacturer declares that the unit implements the option the send multiple messages then the following parameters shall be set. Otherwise the unit shall conform to the mandatory requirement.

3.1.29.1. Value of NPON

A,C,D,E = 2 B = 1

3.1.29.2. Value of NPOFF

A,C,D,E = 3 B = 1

3.1.30 Optional Hunting Routines

If the radio unit manufacturer declares that the radio unit implements the "preferential NDD hunt stage", the "preferential sampled hunt stage" or the "background search sequence" then the following parameters shall be set, where applicable, as indicated. The unit is set to inhibit all such hunts to ensure that all tests operate as indicated in the Test Schedule; NA indicates that the setting is not applicable:

3.1.30.1. Value of NDD preference data

A,B,C,D,E = NA

3.1.30.2. Preferred NDD sub-field lengths

A,B,C,D,E = All sub-field lengths set to 0

3.1.30.3. Preferred NDD priority indicator

A,B,C,D,E = NA

3.1.30.4. LM1 Level margin

A,B,C,D,E = NA

3.1.30.5. LM2 Level margin

A,B,C,D,E, = NA

3.1.30.6. LM3 Level margin

A,B,C,D,E = NA

3.1.30.7. NS - No. of samples in background sampling activity

A,B,C,D,E = NA

3.1.30.8. TH - Sampling activity duration

A,B,C,D,E = 0

3.1.30.9. TL - Sampling activity interval

A,B,C,D,E = 0

3.2. Radio Unit Personalisation

All radio units attempting type approval shall have the following settings.

3.2.1. Own PFIX

A,C,D,E = 39 B = 100

3.2.2. Own Individual IDENT

A,B,C,D,E = 2046

3.2.3. Two or Three Digit Individual Calls

A,C,D,E = 3 digits B = 2 digits

3.2.4. Individual Base IDENT (keypad radios)

A,C,D,E = 2004 B = 2034

3.2.5. Two or Three Digit Group Calls

A,C,D,E = 2 digit B = 3 digit

3.2.6. Highest Own Fleet Individual IDENT (keypad radios)

A,C,D,E = 2199 B = 2099

3.2.7. Group Addresses

The radio unit shall be a member of at least the following group:

A,C,D,E = 39/0605 B = 100/0605

The remaining three groups are not defined.

3.2.8. Inter-Fleet Group Calls Barred Flag

Networks may require that certain radio units are not allowed to make inter-fleet group calls (see 8.2.3.2.1.).

A,C,D,E = Barred B = Not Barred

3.2.9. Group Base IDENT

A,B,C,D,E = 0600

3.2.10. Highest Own Group IDENT

A,B,C,D,E = 0609

3.2.11. Control Category

A,C,D,E = CCAT A B = CCAT B

3.3. Additional Radio Unit Preparation

In addition to the five sets of personalisation data (A,B,C,D and E) specified in 3.1 and 3.2 some tests in this specification may require additional programming or preparation of radio units.

The tests in section 5 relating to frequency deviation for standard data, receiver frequency tolerance and demodulation characteristic require that the radio unit is set to the same state that was used when the unit was attempting type approval to MPT 1323 (i.e the unit shall not operate in the trunked mode). This state is referred to in this specification as "manual mode".

Some tests in section 7 require that the radio unit shall be equipped to be able to generate codeword 503 (RQS) as a result of a key operation (or equivalent) by the Tester. For radio units equipped when keypad dialling facilities as specified in section 8.2. of MPT 1343 the generation of codeword 503 may be achieved by the key sequence 275#. Radio units not equipped with such keypad dialling facilities shall be programmed with PFIX = 39 IDENT = 2079 as one of the radio unit's calling options, however this is achieved (refer to the manufacturer's data supplied under the provisions of section 3.4.).

Some tests in section 7 require that, if the radio unit provides the appropriate standard options, it shall be equipped to be able to generate codeword 504 (RQS) as a result of a key operation (or equivalent) by the Tester. For radio units equipped with keypad dialling facilities as specified in section 8.2. of MPT1343 the generation of codeword 504 may be achieved by the key sequence *11*95#. Radio units not equipped with such keypad dialling facilities shall be programmes with PFIX=39 IDENT 0605 (configured as a broadcast group call request) as one of the radio unit's calling options, however this is achieved (refer to the manufacturer's data supplied under the provision of section 3.4.).

Radio units which are eligible for testing of the facility to accept an incoming call for call back will require to be configured to accept calls in this way for the purposes of one test in section 7.11.

One test in section 9 requires that the radio unit's loudspeaker connections shall be accessible. Information and any special tools shall be supplied in order to obtain such access.

3.4. Documentation

The manufacturer shall supply a copy of the radio unit User's Guide for the radio and the following information (which shall conform to MPT1343 where applicable).

Optional Facilities Supplied

Operating Instructions - These shall incorporate a description of the confidence indications used on the radio unit.

Installation Instructions

Instructions to dismantle the radio unit to view the security number mark.

Instruction to dismantle the radio unit to provide access to the loudspeaker connections.

Instructions to Change Network

Contact reference for Technical Questions

Instructions for configuring the radio unit for a required personality.

The manufacturers rated audio output power of the radio unit.

In addition to the information in the user's guide the manufacturer shall supply the values of the fields carrying security number information in the SAMIS response to a security check validation message (AHYC) which are correct for the radio unit supplied for test (refer to codeword 702 in 4.1.3.7.). The manufacturer shall also supply information concerning the precise location and identity of the component within the radio unit which stores the security number of the type of unit utilised for this storage facility.

This section defines the structure of codewords and multi-codeword message sequences to be used in the tests in this specification and assigns values to the fields within codewords. Each codeword and message sequence is allocated a unique three digit number to facilitate reference in the test descriptions.

The following symbolism is used in this section:

*	indicates that the value of a field is specified within the test description and may vary between tests.
'01'	indicates a value in binary form
10	indicates a decimal value of a binary field
X	indicates a decimal digit which is not specified

Where CHAN fields are specified in the codewords, they refer to channels in sub-band 2. For corresponding channels in sub-band 1 replace the leading binary digit '0' by '1'.

4.1.3.1 Control Channel System Codewords (CCSC)

Codeword 101
(CCSC)

'0'	SYS '101010110000001'	CCS '1100100111001110'	PREAMBLE '1010101010101010'	P '1100010011010111'

Codeword 102
(CCSC)

'0'	SYS *	CCS *	PREAMBLE '1010101010101010'	P '1100010011010111'

Codeword 103
(CCSC)

'0'	SYS '101011001010001'	CCS '0111011110110010'	PREAMBLE '1010101010101010'	P '1100010011010111'

4.1.3.2 GTC codewords

Codeword 201 (GTC)	'1'	PFIX 39	IDENT1 2046	'0'	D '0'	CHAN *	IDENT2 2079	(N) X	P
Codeword 202 (GTC)	'1'	PFIX 39	IDENT1 2046	'0'	D '1'	CHAN *	IDENT2 2079	(N) X	P
Codeword 203 (GTC)	'1'	PFIX 39	IDENT1 2048	'0'	D '0'	CHAN *	IDENT2 2079	(N) *	P
Codeword 204 (GTC)	'1'	PFIX 100	IDENT1 2046	'0'	D '0'	CHAN *	IDENT2 2079	(N) X	P
Codeword 205 (GTC)	'1'	PFIX 39	IDENT1 2079	'0'	D '0'	CHAN '0011111100'	IDENT2 2046	(N) X	P
Codeword 206 (GTC)	'1'	PFIX 39	IDENT1 605	'0'	D '0'	CHAN '0011111100'	IDENT2 2079	(N) X	P
Codeword 207 (GTC)	'1'	PFIX 39	IDENT1 605	'0'	D '0'	CHAN '0011111100'	IDENT2 2046	(N) X	P
Codeword 208 (GTC)	'1'	PFIX 39	IDENT1 605	'0'	D *	CHAN *	IDENT2 2079	(N) X	P
Codeword 209 (GTC)	'1'	PFIX 39	IDENT1 2079	'0'	D '*	CHAN *	IDENT2 2046	(N) X	P
Codeword 210 (GTC)	'1'	PFIX 39	IDENT1 605	'0'	D *	CHAN *	IDENT2 2046	(N) X	P

Codeword 301 (ALH)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '000'	CHAN4 *	WT X	RSVD '00'	(M) 0	(N) 0	P
Codeword 302 (ALHR)	'1'	PFIX 39	IDENT1 2946	'1'	CAT 000	TYPE '00'	FUNC '000'	CHAN4 *	WT X	RSVD '00'	(M) 20	(N) XX	P
Codeword 303 (AL -N variable)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '000'	CHAN4 *	WT '0'	RSVD '00'	(M) 0	(N) *	P
Codeword 304 (AL -M variable)	'1'	PFIX 39	IDENT1 1982	'1'	CAT 000	TYPE '00'	FUNC '000'	CHAN4 *	WT '1'	RSVD '00'	(M) *	(N) 2	P
Codeword 305 (AL - WT variable)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '000'	CHAN4 *	WT *	RSVD '00'	(M) 0	(N) 1	P
Codeword 306 (ALH0)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '010'	CHAN4 *	WT *	RSVD '00'	(M) *	(N) 1	P
Codeword 307 (ALHE)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '011'	CHAN4 *	WT X	RSVD '00'	(M) 0	(N) 1	P
Codeword 308 (ALHR)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '100'	CHAN4 *	WT *	RSVD '00'	(M) 0	(N) 1	P

Codeword 309 (ALHX)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '101'	CHAN4 *	WT X	RSVD '00'	(M) 0	(N) 1	P

Codeword 310 (ALH)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '000'	CHAN4 *	WT X	RSVD '00'	(M) 0	(N) 8	P

Codeword 311 (ALH)	'1'	PFIX XXX	IDENT1 XXXX	'1'	CAT 000	TYPE '00'	FUNC '000'	CHAN4 *	WT X	RSVD '00'	(M) 0	(N) 8	P

4.1.3.4 Acknowledgement codewords

Codeword 401 (ACK)	'1'	PFIX 39	IDENT1 8185	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 402 (ACK)	'1'	PFIX 39	IDENT1 8185	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2048	QUAL '0'	(N) XX	P
Codeword 403 (ACK)	'1'	PFIX 100	IDENT1 8185	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 404 (ACKB)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '111'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 405 (ACKX)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '011'	IDENT2 2046	QUAL '1'	(N) XX	P
Codeword 406 (ACKX)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '011'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 407 (ACK)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 0	QUAL '0'	(N) XX	P
Codeword 408 (ACKI)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '001'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 409 (ACK)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '001'	IDENT2 2046	QUAL '1'	(N) XX	P
Codeword 410 (ACK)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2046	QUAL '1'	(N) XX	P

Codeword 411 (ACK)	'1'	PFIX 39	IDENT1 8190	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 412 (ACKB)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '01'	FUNC '111'	IDENT2 2079	QUAL '0'	(N) XX	P
Codeword 413 (ACK)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '100'	IDENT2 2046	QUAL *	(N) XX	P
Codeword 414 (ACK)	'1'	PFIX 39	IDENT1 605	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 415 (ACKI)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '01'	FUNC '001'	IDENT2 2079	QUAL '0'	(N) XX	P
Codeword 416 (ACK)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2079	QUAL *	(N) XX	P
Codeword 417 (ACKX)	'1'	PFIX 39	IDENT1 8185	'1'	CAT 000	TYPE '01'	FUNC '011'	IDENT2 2046	QUAL '0'	(N) XX	P
Codeword 418 (ACK)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '01'	FUNC '000'	IDENT2 2046	QUAL '0'	(N) XX	P

4.1.3.5 Request codewords

Codeword 501 (RQR)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '101'	IDENT2 '000000000000000'	RSVD '000'	P

Codeword 502 (RQR)	'1'	PFIX 100	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '101'	IDENT2 '000000000000000'	RSVD '000'	P

Codeword 503 (RQS)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '1'	EXT '0'	FLAG1 '0'	FLAG2 '0'	P

Codeword 504 (RQS)	'1'	PFIX 39	IDENT1 605	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '1'	EXT '0'	FLAG1 '1'	FLAG2 '0'	P

Codeword 505 (RQX)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '10'	FUNC '010'	IDENT2 2046	RSVD '00000'	P

Codeword 506 (RQQ)	'1'	PFIX 39	IDENT1 8190	'1'	CAT 000	TYPE '10'	FUNC '110'	IDENT2 2046	STATUS *	P

Codeword 507 (RQS)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '1'	EXT '0'	FLAG1 '0'	FLAG2 '0'	P

Codeword 508 (RQS)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '1'	EXT '1'	FLAG1 '0'	FLAG2 '0'	P

Codeword 509 (RQS)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '1'	EXT '1'	FLAG1 '1'	FLAG2 '0'	P

Codeword 510 (RQS)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '1'	EXT '1`'	FLAG1 '0'	FLAG2 '1'	P

Codeword 511 (RQS)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT *	LEVEL '1'	EXT '0'	FLAG 1 '0'	FLAG2 '0'	P

Codeword 512 (RQS)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '1'	EXT *	FLAG1 *	FLAG2 *	P

Codeword 513 (RQS)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	DT '0'	LEVEL '0'	EXT '0'	FLAG1 '0'	FLAG2 '0'	P

4.1.3.6 Ahoy codewords

Codeword 601 (AHYC)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '111'	IDENT2 8190	SLOTS '01'	DESC '000'	P

Codeword 602 (AHY)	'1'	PFIX 39	IDENT 1 2047	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 XXXX	D '0'	POINT '01'	CHECK '0'	E '0'	AD '0'	P

Codeword 603 (AHYC)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '111'	IDENT2 8190	SLOTS '01'	DESC '000'	P

Codeword 604 (AHY)	'1'	PFIX 39	IDENT1 2048	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 8190	D '0'	POINT '1'	CHECK '0'	E '0'	AD '0'	P

Codeword 605 (AHY)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	D '0'	POINT '0'	CHECK '0'	E '0'	AD '0'	P

Codeword 606 (AHY)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 0	D '0'	POINT '0'	CHECK '0'	E '0'	AD '0'	P

Codeword 607 (AHY)	'1'	PFIX 39	IDENT1 0	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 0	D '0'	POINT '0'	CHECK '0'	E '0'	AD '0'	P

Codeword 608 (AHY)	'1'	PFIX *	IDENT1 *	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 0	D '0'	POINT '0'	CHECK '0'	E '0'	AD '0'	P

Codeword 609 (AHY)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2079	D '0'	POINT '0'	CHECK '1'	E '0'	AD '0'	P

Codeword 610 (AHY)	'1'	PFIX 39	IDENT1 2079	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2046	D '0'	POINT '1'	CHECK '0'	E '0'	AD '0'	P

Codeword 611 (AHYC)	'1'	PFIX 39	IDENT1 8189	'1'	CAT 000	TYPE '10'	FUNC '111'	IDENT 2 2046	SLOTS '01'	DESC '000'	P

Codeword 612 (AHY)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '000'	IDENT2 2079	D '0'	POINT '0'	CHECK '0'	E '0'	AD '0'	P

Codeword 613 (AHYX)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '10'	FUNC '010'	IDENT2 2079	RSVD '00000'	P

4.1.3.7 Miscellaneous control codewords

Codeword 701 (MOVE)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '011'	CONT *	(M) 20	RSVD '000'	P

Codeword 702 (CLEAR)	'1'	CHAN *	CONT *	'1'	CAT 000	TYPE '11'	FUNC '010'	RSVD/SPARE '000000'	REVS '101010101010'	P

Codeword 703 (MOVE)	'1'	PFIX 100	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '011'	CONT *	(M) 20	RSVD '000'	P

Codeword 704 (BCAST)	'1'	SYSDEF '00011'	SYS *	'1'	CAT 000	TYPE '11'	FUNC '100'	RSVD '0000'	NA *	REG '0'	SPARE '00000'	RSVD '000000'	P

Codeword 705 (BCAST)	'1'	SYSDEF '00011'	SYS *	'1'	CAT 000	TYPE '11'	FUNC '100'	RSVD '0000'	NA *	REG '1'	SPARE '00000'	RSVD '000000'	P

Codeword 706 (MAINT)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '000'	RSVD '00000'	P

Codeword 707 (MAINT)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '010'	RSVD '00000'	P

Codeword 708 (MAINT)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '001'	RSVD '00000'	P

Codeword 709 (BCAST)	'1'	SYSDEF '00010'	SYS '101010110 000001'	'1'	CAT 000	TYPE '11'	FUNC '100'	PER '1'	IVAL '00000'	PON '0'	ID '1'	RSVD '00'	SP '00000000'	P

Codeword 710 (BCAST)	'1'	SYSDEF '00010'	SYS '101010110000 001'	'1'	CAT 000	TYPE '11'	FUNC '100'	PER '0'	IVAL '00010'	PON '1'	ID '1'	RSVD '00'	SP '00000000'	P

Codeword 711 (MARK)	'1'	CHAN4 '0101'	SYS '10101000 1001001'	'1'	CAT 000	TYPE '11'	FUNC '000'	B '101011011010011111'	P '1100010011010111'

Codeword 712 (MAINT)	'1'	PFIX 39	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '011'	RSVD '00000'	P

Codeword 713 (MAINT)	'1'	PFIX 39	IDENT 1 2046	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '111'	RSVD '00000'	P

Codeword 714 (MAINT)	'1'	PFIX 39	IDENT1 605	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '111'	RSVD '00000'	P

Codeword 715 (MAINT)	'1'	PFIX 39	IDENT1 *	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '110'	RSVD '00000'	P

Codeword 716 (MAINT)	'1'	PFIX 100	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '001'	RSVD '00000'	P

Codeword 717 (MAINT)	'1'	PFIX 100	IDENT1 2046	'1'	CAT 000	TYPE '11'	FUNC '001'	CHAN '0011111100'	OPER '011'	RSVD '00000'	P

4.1.3.8 Other codewords

Codeword 801 (SAMIS)	'1'	MERCODE (NOTE1)	MODEL (NOTE1)	CHECK BITS (NOTE2)	'1'	CAT '001'	TYPE '0'	SOL '0'	DESC '000'	SERIAL NO (NOTE1)	P

Codeword 802 (DATA)	'0'	'11110000111000110010000011110001110011011111000'	P

Codeword 803 (SAMIS)	PRIX 120	'1'	IDENT1 1739	CAT '001'	TYPE '0'	SOL '0'	DESC '000'	PARAMETERS2 '000000000000000000'	P

NOTE 1

The information in these fields shall comply with the security number of the radio unit under test as advised by the manufacturer (see 3.4).

NOTE 2

The information in this field shall be the result of applying the security algorithm to the fields covered by Note 1.

4.1.3.9 Multi-codeword messages

Message 901

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 302	NON-SPECIFIED CODEWORDS

Message 902

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 302	NON-SPECIFIED CODEWORDS (NOTE 1)	CODEWORD 101	CODEWORD 203	NON-SPECIFIED CODEWORDS (NOTE 1)

REPEAT PATTERN

CODEWORD 101	CODEWORD 402	NON-SPECIFIED CODEWORDS (NOTE 1)

Message 903

REPEAT PATTERN

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 304	NON-SPECIFIED CODEWORDS (NOTE 1)

Message 904

REPEAT PATTERN

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 305	CODEWORD 101	CODEWORD 402	CODEWORD 101	CODEWORD 402	CODEWORD 301

Message 905

REPEAT PATTERN

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 303	NON-SPECIFIED CODEWORDS (NOTE 1)

Message 906

←REPEAT PATTERN→

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 306

Message 907

←REPEAT PATTERN→

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 307

Message 908

←REPEAT PATTERN→

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 101	CODEWORD 308

Message 909

←REPEAT PATTERN→

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 301	CODEWORD 103	CODEWORD 309

Message 910

←REPEAT PATTERN

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 711	CODEWORD 101	CODEWORD 711	CODEWORD 101	CODEWORD 606	CODEWORD 101	CODEWORD 607

→

CODEWORD 101	CODEWORD 607

Message 911

←REPEAT PATTERN
100 TIMES

LET	PREAMBLE (16 BITS)	SYNC	CODEWORD 711	CODEWORD 101	CODEWORD 711	CODEWORD 101	CODEWORD 608	CODEWORD 101	CODEWORD 607

→

CODEWORD 101	CODEWORD 607

With the exception of sections 5.2.1.4 and 5.2.1.5, the CHAN and CONT fields referred to in the tests of sections 5, 6 and 7 are for Band III sub-band 2. For tests made on radio units operating in Band III sub-band 1, replace the leading binary digit '0' by '1' (except for CHAN='0000000000' which is valid for both sub bands).

The tests in this specification all require the use of a General Test Assembly which simulates a TSC and base station(s) with transmissions complying to MPT1347 except where specified. Other test equipment required for specific tests is specified as necessary.
The General Test Assembly which is illustrated conceptually in figure 4.1, shall have the following properties not usual in a practical system conforming to MPT1347:

a) Transmitting level normally set at -85 dBm, but variable for specific tests as specified.

b) Ability to transmit planned strings of messages dependant only on tests being conducted and also to fill non-specific parts of any control channel with codewords (except CCSC and MARK) conveying no information for the radio unit being tested.

c) The capability to reduce the S/N ratio perceived by the radio unit to worse than 0 dB, as measured over a channel bandwidth. The reduction shall not start before bit 3 nor finish later than bit 62 of any selected codeword, and shall last at full value for 30 ± 10 ms.

d) Only one received channel shall be examined at any instant, depending on the test being conducted. The channel receiver shall incorporate a data decoder which at least properly recovers bits at any signal level equal to or greater than 90% of the maximum received signal power.

e) For each received data transmission the instant of beginning of each SYNC or SYNT sequence shall be determined.

   Indication that at least 16 bits of preamble have been received may be helpful.

f) A radio signal strength indicator (RSSI) to indicate the instants at which the received power rises above and falls below -60dB (termed "L-60") relative to maximum signal power. L is the signal level at the input to the RSSI when the radio unit under test is transmitting at full power.

g) A wide-band power-indicating receiver covering at least 174 to 225 MHz, and with sensitivity, as measured over any 8 kHz band, not worse than -50 dB, nor better than -60dB, relative to maximum radio unit power.

h) A non-error-correcting data receiver with foreknowledge of the message expected from the radio unit, and indication of any unexpected or faulty transmission from the radio unit under test.

j) A classifying counter of all random access events, capable of counting the numbers of such events for each possible length of random access frame according to the time-slot positions within that length frame.

k) SINAD test Set.

l) An expected response window function with a counter for responses inside the window and a counter for responses outside the window.

4.2.2 Non-specific codewords in any forward control channel

For tests in this specification some particular messages are transmitted on the forward control channel. The General Test Assembly shall fill all other parts of a forward control channel with non-specific message codewords having the approximate relative frequency of occurrence given below. All the types of codeword listed shall at least be transmitted from time to time.

Except for MARK, miscellaneous system control messages shall not be transmitted unless specified for particular tests.

So far as possible, all the messages listed below shall occur both inside and outside random access frames. All messages shall comply with MPT1327. Unless otherwise specified, approximately half of the data codewords in the second half of a slot shall have the RSA flag set to '0'.

Message Type	Appropriate Percentage Fill of Forward Control Channel
CCSC as required for each test	35
String of 2 data codewords displacing one CCSC	20
String of 4 data codewords displacing two CCSCs	10
Go-to-channel messages not relevant to RU (For these GTC messages, N=0 is suggested but, in any case, values of N shall be consistent with the correct application of the random access protocol in section 7 of MPT1327)	10
Aloha messages with N=0, and WT and M = last previous values	5
Acknowledgements not relevant to RU (For these Acknowledgements, N=0 is suggested but, in any case, values of N shall be consistent with the correct application of the random access protocol in Section 7 of MPT1327)	5
Ahoy type messages not relevant to RU	5
MARK	5
SAMO message not relevant to RU	2.5
HEAD address not relevant to RU	2.5

Conceptual Block Diagram of General Test Assembly

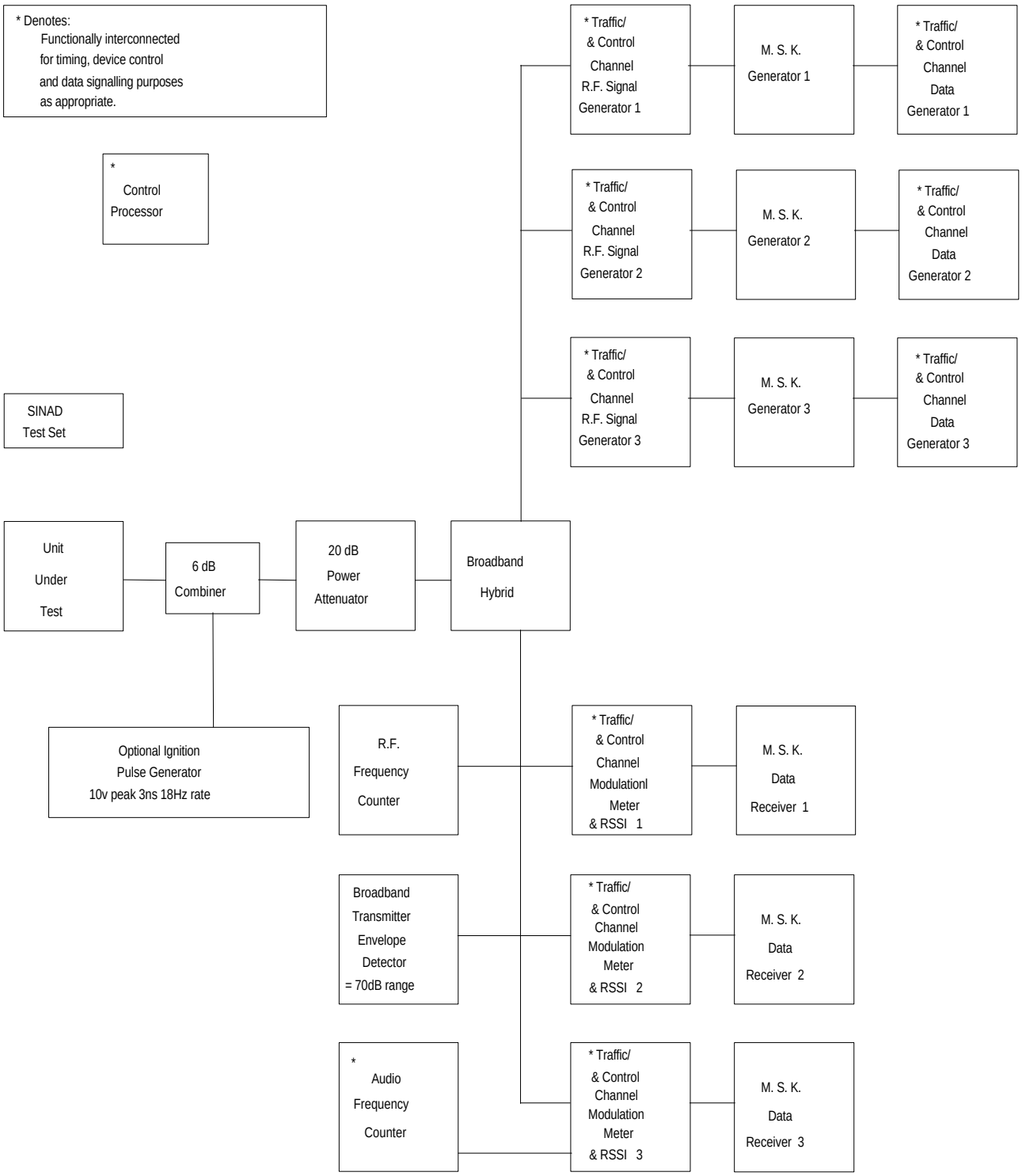

Figure 4.1

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 189. The radio unit shall be in the idle state on this control channel immediately prior to the test.

5.2.2.1 Test Numbers

50206X to 50211X

The Tester shall connect the radio unit at its aerial socket to a frequency demodulator to which is connected an audio frequency counter.

The Tester shall measure the modulation frequency and deviation for two cases.

TEST 50206X with the radio unit set to transmit a continuous train of binary '1's.

TEST 50207X with the radio unit set to transmit a continuous train of binary '0's.

The encoder frequency and peak deviation of the r.f. carrier shall lie within the limits specified in 5.2.2.5.

In addition the Tester shall compare the measured deviation in test 50206X with the measured deviation in test 50207X. The difference shall lie within the limits given in 5.2.2.5.

TEST 50208X comparison of peak deviation measured for binary '0' and binary '1'.

The Tester shall then repeat the tests at extreme conditions of temperature and power supply voltage for four combinations of temperature and power supply voltage as follows:

i) Maximum temperature plus minimum power supply voltage,

ii) Maximum temperature plus maximum power supply voltage,

iii) Minimum temperature plus minimum power supply voltage,

iv) Minimum temperature plus maximum power supply voltage.

For each test the encoder frequency and peak deviation of the r.f. carrier shall be within the limits specified in 5.3.3.5 relevant to extreme conditions for all four combinations of temperature and power supply voltage.

TEST 50209X with the radio unit set to transmit a continuous train of binary '1's (extreme conditions).

TEST 50210X with the radio unit set to transmit a continuous train of binary '0's (extreme conditions).

5.2.4.1 Test numbers

Test are not specified in this issue.

5.2.4.2 Purpose of tests

The continuous tests (Section 6) ensure that transmissions only occur at the correct times. What they do not test however is that the transmitter has reached 90% of its maximum power before the beginning of the 16 bit preamble. The purpose of this test is to ensure that the correct rise time is adhered to.

The Tester shall connect the radio unit at its aerial socket to an unmodulated signal generator and at its loudspeaker terminals to a true RMS voltmeter. The squelch shall be inactivated and the audio unmuted. With the signal generator switched off the Tester shall measure the noise at the loudspeaker terminals. This reading shall correspond to 0 dB. With the
signal generator set to the nominal centre frequency appropriate to the test the Tester shall increase its output level until the voltmeter reads -20 dB.

The Tester shall then increase the signal generator output by 6 dB and gradually reduce the frequency until the voltmeter once again reads -20 dB. The value of the output frequency shall be noted.

The Tester shall then gradually increase the output frequency of the signal generator until the voltmeter again reads -20 dB. The value of the output frequency shall be noted.

The mean of the two noted frequency values is the actual centre frequency of the response of the receiver which shall be within the limits specified in 5.3.1.5.

Two tests using this method shall be carried out, with different values of nominal receive frequency, as follows:

TEST	**NOMINAL RECEIVE FREQUENCY**		**CHANNEL NO.**
	sub-band 1	**sub-band 2**	
50301X	177.2125 MHz	201.2125 MHz	58
50302X	183.4875 MHz	207.4875 MHz	560

The Tester shall use the General Test Assembly to send MOVE codeword number 701 with the value of the CONT field set to '0111110111' within the forward message stream on channel number 58.

At some appropriate time the Tester shall cause the General Test Assembly to radiate a new control channel on channel number 560 such that the first transmission on this forward control channel is message ~~901~~915 synchronised such that the first bit of the preamble in message ~~901~~915 begins not more than 35ms after the last bit of codeword number 701 sent on channel number 58.

~~The value of the CHAN4 field in codewords 301 and 302 of message 901 shall be set to '0111' and the preamble shall be preceded by at least 5ms of Link Establishment Time (LET) in accordance with 3.3.3.1 of MPT1327. The General Test Assembly shall monitor the return slot following codeword 302 for a response from the radio unit.~~

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0111110111' within the forward message stream on channel number 58.

At some appropriate time the Tester shall cause the General Test Assembly to radiate a traffic channel on channel number 560 such that the first transmission on the forward traffic channel is codeword 601 in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel) synchronised such that the first bit of the preamble preceding codeword 601 begins not more than 35ms after the last bit of codeword number 201 sent on channel number 58. The preamble of the message transmission containing codeword 601 shall be preceded by at least 5ms of Link Establishment Time (LET) in accordance with 6.1.2.2 of MPT1327. The General Test Assembly shall monitor the return traffic channel for a response from the radio unit to codeword 601.

The Tester shall use the General Test Assembly to send CLEAR codeword number 702 ~~7O2~~ on channel number 560 in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel) and with the value of the CHAN field set to '0111110111' and the CONT field set to '0000000001'.

At some appropriate time the Tester shall cause the General Test Assembly to radiate a new control channel on channel number 58 such that the first transmission on this forward control channel is message ~~901~~915, synchronised such that the first bit of the preamble in message ~~901~~915 begins not more than 35ms after the last bit of codeword number 702 sent on channel number 560.

~~The value of the CHAN4 field in codewords 301 and 302 of message 901 shall be set to '0001' and the preamble shall be preceded by at least 5ms of Link Establishment Time (LET) in accordance with 3.3.3.1 of MPT1327. The General Test Assembly shall monitor the return slot following codeword 302 for a response from the radio unit.~~
The value of the CHAN4 field in codeword 301 of message 915 shall be set to '0001'. The value of CHAN in codeword 201 of message 915 shall be set to '0011111100'. The preamble shall be preceded by at least 5mS of Link Establishment Time (LET) in accordance with 6.1.2.2 of MPT 127.

50306A

5.3.2.4.2 Purpose of test

To ensure that the radio unit is capable of receiving on a traffic channel in accordance with and within the time limit specified in 6.2.1.3, 6.2.2.1, 9.2.2.5, and 9.2.3.4 of MPT1327 and 11.6.2.1.3 of MPT1343 after receiving an instruction to move from another traffic channel to the new traffic channel.

5.3.2.4.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward traffic channel on frequency 560. The radio unit shall be in the idle state on this traffic channel immediately prior to the test. (This may be conveniently achieved by carrying out test 50304A).

5.3.2.4.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 201 on channel number 560 in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel) and with the value of the CHAN field set to '0111110111'.

At some appropriate time the Tester shall cause the General Test Assembly to radiate a traffic channel on channel number 58 such that the first transmission on this forward traffic channel is codeword 601 in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel) synchronised such that the first bit of the preamble preceding codeword 601 begins not more than 35ms after the last bit of codeword number 201 sent on channel number 560. The preamble of the message transmission containing codeword 601 shall be preceded by at least 5ms of Link Establishment Time (LET) in accordance with 6.1.2.2 of MPT1327. The General Test Assembly shall monitor the return traffic channel number 58 for a response from the radio unit to codeword 601.

5.3.2.4.5 Radio unit response

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) within the timing requirements specified in 6.2.2.1 of MPT1327.

The Tester shall connect the radio unit antenna socket to a signal generator with phase modulation capability.

The Tester shall monitor the audio output from the radio unit receiver using either an electrical or an acoustic level meter with a flat frequency response between 300 and 2550 Hz.

The Tester shall set the signal generator to an RF level of 1mV at a frequency of 204.3500 MHz and to be modulated with 0.5 radians modulation. The Tester shall vary this modulating frequency between 300 and 2550 Hz.

As the modulating frequency is varied the Tester shall note the minimum and maximum levels measured on the audio level meter.

The difference between the maximum and minimum audio levels shall lie within the limits specified in 5.3.3.5.

5.3.3.5 Limits

The difference between minimum and maximum audio levels shall be no greater than 6dB.

5.3.4 Standard data error rate performance

The tests in this section are designed to check the radio unit receiver FSK demodulator error rate peformance. This is measured with a received forward control channel (at the radio unit) at one of three levels:

Level A : + 2 dB relative to 1uV pd
i.e. + 8 dB relative to 1uV emf or -105 dBm

Level B : -5 dB relative to 1uV pd
i.e. + 1 dB relative to 1uV emf or -112 dBm

Level C : + 8 dB relative to 1uV pd
i.e. + 14 dB relative to 1uV emf or -99 dBm

5.3.4.1.1 Test number

50308A

5.3.4.1.2 Purpose of test

To ensure that the FSK demodulator error performance of the radio unit conforms to that specified in MPT1343 Appendix A for a received control channel at level A and with no noise added (99% successful response rate to AHY codewords).

5.3.4.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 62. The radio unit shall be in the idle state on this channel immediately prior to the test.

The signal level of the radiated channel at the radio unit shall be set to level A (-105 dBm). The 'count outside window' and the 'count within window' shall be set at zero.

5.3.4.1.4 Test method

The Tester shall cause the General Test Assembly to send the multi-codeword message 910 on the forward control channel number 62. The General Test Assembly shall monitor the 'count outside window' and 'count within window'.

On completion of message 910 the control channel number 62 shall continue using codeword 101 as the CCSC.

5.3.4.1.5 Radio unit response

The radio unit shall respond to each unerrored (after FSK demodulation and error correction) occurrence of codeword 606 (AHY) within message 910 (100 occurrences in

To ensure that the FSK demodulator error performance of the radio unit conforms to that specified in MPT1343 Appendix A for a received control channel at level A (-105 dBm) and with ignition pulse noise added (89% successful response rate to AHY codewords).

5.3.4.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 62. The radio unit shall be in the idle state on this channel immediately prior to the test.

The signal level of channel 62 at the radio unit shall be set to level A (-105 dBm). The 'count outside window' and 'count within window' on the General Test Assembly shall both be zero.

5.3.4.2.4 Test method

The General Test Assembly shall be used to combine 10V peak, 3ns duration pulses at an 18Hz rate with the forward control channel number 62.

The Tester shall cause the General Test Assembly to send the multi-codeword message 910 on the forward control channel number 62. The General Test Assembly shall monitor the 'count outside window' and 'count within window'.

On completion of message 910 the control channel number 62 shall continue using codeword 101 as the CCSC.

5.3.4.2.5 Radio unit response

The radio unit shall respond to each unerrored (after FSK demodulation and error correction) occurrence of codeword 606 (AHY) within message 910 (100 occurrences in total) with codeword 407 (ACK(QUAL='0')) in the slot following. (Note codeword 407 does not have to be monitored explicitly).

The Tester shall cause the General Test Assembly to send the multi-codeword message 910 on the forward control channel number 62. The General Test Assembly shall monitor the 'count outside window' and 'count within window'.

On completion of message 910 the control channel number 62 shall continue using codeword 101 as the CCSC.

5.3.4.3.5 Radio unit response

The radio unit shall respond to each unerrored (after FSK demodulation and error correction) occurrence of codeword 606 (AHY) within message 910 (100 occurrences in total) with codeword 407 (ACK(QUAL='0')) in the slot following. (Note codeword 407 does not have to be monitored explicitly).

This response shall be within the expected radio unit response window. At the end of the test, the counters on the General Test Assembly shall read:

Count within window : not less than 89.

Count outside window : zero.

To ensure that the FSK demodulator error performance of the radio unit conforms to that specified in MPT1343 Appendix A for a received control channel at level C (-99 dBm) with co-channel interference (89% successful response rate to AHY codewords). This interference is generated by an audio signal modulating an RF carrier.

5.3.4.4.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 62. The radio unit shall be in the idle state on this channel immediately prior to the tests.

The signal level at the radio unit of forward control channel number 62 shall be set to level C (-99 dBm). The 'count outside window' and 'count within window' on the General Test Assembly shall be zero at the start of each test.

5.3.4.4.4 Test method

Test 50311A

The Tester shall cause an interfering r.f. signal to be introduced by the General Test Assembly by using an audio signal of frequency 400 Hz to modulate an RF signal corresponding to the frequency of forward control channel number 62. For sub-band 1 this frequency is 177.2625 MHz and for sub-band 2 this frequency is 201.2625 MHz. The level of the 400 Hz signal shall be set such that the RF signal is modulated to 60% of the maximum peak frequency deviation designated in section 5.3.2 of MPT1323. The level of the RF signal shall be set to 10 dB below the level of the forward control channel on channel number 62.

The Tester shall use the General Test Assembly to send the multi-codeword message 910 on the forward control channel number 62. The General Test Assembly shall monitor the 'count outside window' and 'count within window'. On completion of message 910 the control channel number 62 shall continue using codeword 101 as the CCSC.

Test 50312A

The method of test 50311A shall be repeated except that the frequency of the interfering r.f. carrier shall be increased by 1200 Hz.

The Tester shall cause an interfering r.f. signal to be introduced by the General Test Assembly by using a 511 bit test pattern in accordance with CCITT recommendation O.153

The method of test 50314A shall be repeated except that the frequency of the interfering r.f. carrier shall be decreased by 1200 Hz.

5.3.4.5.5 Radio unit response

In all tests, the radio unit shall respond to each unerrored (after FSK demodulation and error correction) occurrence of codeword 606 (AHY) within message 910 (100 occurrences in total) with codeword 407 (ACK(QUAL='0')) in the slot following. (Note codeword 407 does not have to be monitored explicitly). This response shall be within the expected radio unit response window. At the end of the tests, the counters on the General Test Assembly shall read (for both tests):

Count within window	:	not less than 89.
Count outside window	:	zero.

5.3.4.6 FSK demodulation of invalid AHY codewords

5.3.4.6.1 Test number

50317A

5.3.4.6.2 Purpose of tests

To ensure that the radio unit rejects AHY codewords with a valid parity check but invalid PFIX and IDENT1 fields. Previous tests in section 5.3.4 test the FSK error correction of the radio unit demodulator. This test checks that the error correction is based on the P (parity check bits) field of the codewords and that a codeword having correct parity but incorrect PFIX and IDENT1 fields is not falsely interpreted as being applicable to the radio unit under test.

5.3.4.6.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 62. The radio unit shall be in the idle state on this channel immediately prior to the test.

The signal level of the forward control channel number 62 at the radio unit shall be set to level A (-105 dBm). The 'count outside window' and 'count within window' on the General Test Assembly shall both be zero.

5.3.4.6.4 Test method

The Tester shall cause the General Test Assembly to send multi-codeword message 911 on forward control channel number 62. Within this message, codeword 608 (AHY) is transmitted a total of 100 times. For codeword 608 the PFIX and IDENT1 fields shall be selected to differ by 1 bit from the PFIX/IDENT of the unit. The parity shall then be set to give a valid codeword. The location of the bit difference shall be changed for successive 608 codewords so that each of the 20 bit differs shall be sent 5 times in the stream of one hundred 608 codeword messages. The modified codeword fields shall be:

CODEWORD TRANSMISSION	PFIX	IDENT
1, 21, 41, 61, 81	'1100111'	'0011111111110'
2, 22, 42, 62, 82	'0000111'	'0011111111110'
3, 23, 43, 63, 83	'0110111'	'0011111111110'
4, 24, 44, 64, 84	'0101111'	'0011111111110'
5, 25, 45, 65, 85	'0100011'	'0011111111110'
6, 26, 46, 66, 86	'0100101'	'0011111111110'
7, 27, 47, 67, 87	'0100110'	'0011111111110'
8, 28, 48, 68, 88	'0100111'	'1011111111110'
9, 29, 49, 69, 89	'0100111'	'0111111111110'
10, 30, 50, 70, 90	'0100111'	'0001111111110'
11, 31, 51, 71, 91	'0100111'	'0010111111110'
12, 32, 52, 72, 92	'0100111'	'0011011111110'
13, 33, 53, 73, 93	'0100111'	'0011101111110'
14, 34, 54, 74, 94	'0100111'	'0011110111110'
15, 35, 55, 75, 95	'0100111'	'0011111011110'
16, 36, 56, 76, 96	'0100111'	'0011111101110'
17, 37, 57, 77, 97	'0100111'	'0011111110110'
18, 38, 58, 78, 98	'0100111'	'0011111111010'
19, 39, 59, 79, 99	'0100111'	'0011111111100'
20, 40, 60, 80, 100	'0100111'	'0011111111111'

The General Test Assembly shall monitor the 'count outside window' and 'count within window'.

5.3.4.6.5 Radio unit response

The radio unit shall not respond to any of the codewords transmitted as part of multi-codeword message 911. At the end of the tests, the counters on the General Test Assembly shall read:

The Tester shall cause the General Test Assembly to produce "errored" codewords in the radio unit by reducing the signal to noise ratio perceived by the radio unit to 0 dB measured over a channel bandwidth. This reduction shall not start prior to bit 3 nor finish later than bit 62 of selected codewords and shall last at full value for 30 ± 10 ms (Refer to section 4.2.1).

The Tester shall use the General Test Assembly to send the multi-codeword message 912 on the forward control channel number 62. Within this message a sequence of 6 codewords is transmitted until the cessation of the test, which will require the sequence to be repeated at least 8064 times. The second codeword in this sequence shall be either codeword 606 (AHY) or a nearest neighbour of codeword 606. That is , codeword 606 shall be transmitted at least 4032 times and, generally, the interleaving transmissions between transmissions of codeword 606 shall contain nearest neighbours of codeword 606.

All transmissions of message 912 shall contain codeword 606 unless the General Test Assembly has received codeword 407 from the radio unit in response to a transmission of codeword 606 by the General Test Assembly. Reception of codeword 407 from the radio unit by the General Test Assembly shall cause the General Test Assembly to transmit a nearest neighbour codeword to codeword 606 (commencing with the first codeword in the list of 4032 nearest neighbour codewords) in the next transmission of message 912. The message 912 which is transmitted after the message 912 containing the nearest neighbour codeword shall once again contain codeword 606. Each time a nearest neighbour

codeword to codeword 606 is transmitted the General Test Assembly shall select the next codeword from the list of 4032 nearest neighbour codewords for transmission. The Tester shall cause the General Test Assembly to produce an "errored" codeword upon each transmission of a nearest neighbour codeword. The test ceases when all 4032 nearest neighbour codewords of codeword 606 have been transmitted. Thus the General Test Assembly shall transmit a sequence of message 902 where the message alternately contains either codeword 606 or an errored, nearest neighbour codeword to codeword 606 except where the General Test Assembly fails to receive codeword 407 from the radio unit.

The expected response window shall open to receive the whole of a proper response to the unerrored codeword 606 and shall be closed at all other times. The 4032 different values of nearest neighbour of codeword 606 shall be calculated as follows:

64 values of nearest neighbour to codeword 606 shall be calculated by the modulo 2 addition of codeword 606 with each of the following nearest neighbour sequences:

Table of Nearest Neighbour Sequences

Sequence No:	Value
1	'00000000000000000000000000000000010100000100100000000000000011'
2	'00000000000000000000000000000000010000010001000000000010000011'
3	'00000000000000000000000000011000000000000010000000100000000011'
4	'00000000000000000000000011001000000000100000000000000000000011'
5	'00000000000000000000001000000000000000001000000000000101000011'
6	'00000000000000000000010000000000100001000000000000001000000011'
7	'00000000000000000000000000000000000000000000011010010000010000010'
8	'00000000000000000000000000000000000010000000101001000000000100010'
9	'00000000000000000000000000000000000010000001000000000001000101010'
10	'00000000000000000000000000000000010001100000000000000010000110'
11	'00000000000000000000000000000000010001000000000000100100100010'
12	'00000000000000000000000000000000010010001000010100000000000010'
13	'00000000000000000000000000000011000000001100010000000000000010'
14	'00000000000000000000000000000010000000000000010000000100010110'
15	'00000000000000000000000000000010000000000011000010000000010010'
16	'00000000000000000000000000000010000010000001001000000000000110'
17	'00000000000000000000000000000010000000010100000000100000000001010'
18	'00000000000000000000000000000010010100000000000000000101000000010'
19	'00000000000000000000000000000011100000000001000000000000010000010'
20	'00000000000000000000000000000010000000000100000010000010001000010'
21	'00000000000000000000000000000010001000000000000010000000110000010'
22	'00000000000000000000000000000010100010000010000000001000000000010'
23	'00000000000000000000000000000011000100100000000000000000000010010'
24	'00000000000000000000000000000010000000000000000010100000010000010'
25	'00000000000000000000000000000010000000010111000000000000000000010'
26	'00000000000000000000000000000010000000001000000000000100010000000110'
27	'00000000000000000000000000000010000000010000010000000100000000100010'
28	'00000000000000000000000000000010000000100000000100000010100000000010'
29	'00000000000000000000000000000010000010000010000000100000000001000000010'
30	'00000000000000000000000000000010100000000010000000000000000100000110'
31	'00000000000000000000000000000010000000000000000000000000100011000001010'
32	'00000000000000000000000000000010000000000000000000110100000010000000010'
33	'00000000000000000000000000000010000001000000011000000000001000000000010'
34	'00000000000000000000000000000010100000000000000001000000000000000100110'
35	'00000000000000000000000000000010100010000000000000100001000000000000010'
36	'00000000000000000000000000000010000000000100001000000000100000000010010'
37	'00000000000000000000000000000010000100000000010000000000000000100001010'

38 '0000000000000000000000100100000100000000000000010000001000000010'
39 '0000000000000000000000100101000000000000000010000010000000000010'
40 '0000000000000000000001000000000000001000000010100000000000000110'
41 '0000000000000000000001000000000000001000000100000100000100000010'
42 '0000000000000000000010000000100000000000000010010000100000000010'
43 '0000000000000000000010000000100000000000011000000000000000001010'
44 '0000000000000000000010000001000100010000000000100000000000000010'
45 '0000000000000000000010000100000000000000001000000000110000000010'
46 '0000000000000000000100000001001000000000000000001001000000000010'
47 '0000000000000000000110000000000010000000100000000000100000010'
48 '0000000000000000000100000000000000000100011000000100000000000010'
49 '0000000000000000000100000000010000000100000100000010000000010'
50 '0000000000000000000110010000000000000001000100000000000000010'
51 '0000000000000000001000000000000100000000001000000010000100010'
52 '0000000000000000001000000010000000000000010000000000100100000010'
53 '0000000000000000010000001000000000000101000001000000000000010'
54 '0000000000000000010100001000000000000100000010000000000000010'
55 '0000000000000000011000000000000000100000000001000000000010010'
56 '0000000000000000100000000000000100000001000000000001000010010'
57 '0000000000000000100000000000001000100000000010000000001000010'
58 '0000000000000000100000010000000000100000000000000100010000010'
59 '0000000000000000100001000000000011000000000010000000000000010'
60 '0000000000000001000000000000010000001000100000000100000000010'
61 '0000000000000001000100000000000100001000000000000001000000010'
62 '0000000000000001001000000010000001000000000001000000000000010'
63 '0000000000000010001000000000000100000000000000101000000000010'
64 '0000000000001000000000000100000000000010000000000100000010010'

The remaining 3968 values of nearest neighbours to codeword 606 shall be derived by cycling bits 1 to 63 in each of the 64 nearest neighbour sequences i.e., shifting the bits one place to the left or right (with wrap around of bits 1 and 63) and calculated by the modulo 2 addition of codeword 606. This shall give a further 62 possible, nearest neighbour codewords from each of the 64 calculated values.

The General Test Assembly shall monitor the 'count outside window' and 'count within window' for the slot immediately following each nearest neighbour codeword.

5.3.4.7.5 Radio unit response

The radio unit shall respond to at least 4032 unerrored (after FSK demodulation and error correction) occurences of codeword 606 with codeword 407. This response shall be within the expected radio unit response window. The radio unit shall not respond to any unerrored (after FSK demodulation and error correction) occurences of nearest neighbour codewords to codeword 606 or to codeword 607. At the end of the test, the counters on the General Test Assembly shall read:

Count within window	:	4032
Count outside window	:	zero

The radio unit shall be connected to the General Test Assembly and undergoing the tests defined in Section 7.

6.2.1.4 Test method

The General Test Assembly shall monitor the output of the wide band power indicating receiver, as well as the output of the selective RSSI and record any occasion on which an output from the wide band receiver is not accompanied by a simultaneous indication from the RSSI.

On a traffic channel:

a) The RSSI shall not indicate earlier than bit 21.

b) The SYNT sequence shall start not earlier than bit 52 nor later nor later than bit 65.

This test is to check that received audio is muted in a radio unit unless the radio unit is on a traffic channel, as a result of receiving an appropriate GTC with the D field set to '0' in accordance with 5.4 of MPT1327.

The Tester shall cause the General Test Assembly to send message 902 continuously on the forward control channel on channel number 282. Message 902 shall be sent with two alternate sets of parameters. In all transmissions of message 902 the value of CHAN 4 in codewords 301 and 303 shall be set to '0001' and the value of CHAN in codeword 203 shall be set to '0011100100'. Non-specified codewords,which will be sent as specified in4.2.2 but in the proportions indicated, shall be chosen from the following list of codewords: CCSC (50%), GTC (20%), Aloha (10%), ACKs (10%) and MARK (10%). In odd numbered transmissions of message 902 the value of N in codewords 303 and 402

The Tester shall cause the General Test Assembly to send message 902 continuously on the forward control channel on channel number 282. In codewords 301 and 303 the value of CHAN 4 shall be set to '0001' and in codeword 303 the value of N shall be set to 6. In codeword 203 the value of CHAN shall be set to '0011100100' and the value of N shall be set to 3.

The radio unit shall be set for A personalisation. The Tester shall cause the General Test Assembly to send message 905 continuously on the forward control channel on channel number 282. In codewords 301 and 303 the value of CHAN 4 shall be set to '0001' and in

The radio unit shall respond at the 25 second time, but shall not respond at the 35 second time.

6.3.5.1 Test numbers

60310A WT = 3
60311A WT = 6
60312A WT = 7

The Tester shall cause the General Test Assembly to send message 901 on the forward control channel number 282. In codewords 301 and 302 the value of CHAN 4 shall be set to '0001'.

When the radio unit responds, the recovered audio shall be examined, with a storage oscilloscope or similar. The double mark at the start of the SYNC message shall be identified, and the number of transitions prior to this point recorded.

6.3.6.5 Limits

The number of transistions recorded shall be greater than 15 and transitions shall be 0.83 ms ± 10% apart.

7.1.4.2 Purpose of test

To ensure that, when the control channel is radiating ALHR, a radio unit will not attempt to access the control channel when a simple speech call is requested by the user in accordance with 7.3.2 of MPT1327.

7.1.4.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio Unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.1.4.4 Test method

The Tester shall cause the General Test Assembly to send message 908 continuously on the forward control channel on channel number 282. In codewords 301 and 308 the value of CHAN4 shall be set to '0001'.

The radio unit shall not transmit prior to codeword 303 being sent, and shall then transmit codeword 501 in the slot immediately following codeword 303.

The following series of tests simulates conditions under which a radio unit shall leave its current control channel and seek a new control channel. Two control channels, selected from the set of Normal Hunt channel numbers, are employed.

Initially the SYS fields used for both channels differ only in FREE bits, and the radio unit is authorised to acquire both (by virtue of the AREA field).

The radio unit is forced to relinquish a control channel by conditions or events on that channel that shall cause the radio unit to enter the control channel acquisition procedures. The security number check procedure is used to verify the identity of the control channel acquired subsequently.

70202A

70203A

7.2.2.3.2 Purpose of test

To ensure that the radio unit relinquishes the current control channel, enters the control channel acquisition procedures and acquires another control channel after it has failed to

7.2.2.4.1 Test number

70204A

7.2.2.4.2 Purpose of test

To ensure that the radio unit relinquises the current control channel, enters the control channel acquisition procedures and acquires another control channel after it has received, in two consecutive decodable CCSCs, a value of LAB field which indicates that the control category of the radio unit is no longer permitted access on the current control channel in accordance with 9.3.3.3, 9.3.4 and 9.4.1 of MPT1343.

7.2.2.4.3 Initialisation

To ensure that the radio unit reliquishes the current control channel, and enters the control channel acquisition procedures and acquires another control channel after it has detected errors exceeding the prescribed rate on the received forward control channel in accordance with 9.3.3.3, 9.3.4 and 9.4.1 of MPT1343.

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 58 and 62, set to give a nominal signal level at the receiver of -103 dBm.

The radio unit shall be in the idle state on control channel number 58 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70204A immediately prior to test 70205A). The forward control channels shall carry the values of fields in the CCSC as specified for test 70201A.

7.2.2.5.4 Test method

The Tester shall cause the General Test Assembly to produce "errored" codewords in the radio unit by reducing the signal to noise ratio perceived by the radio unit to 0 dB measured over a channel bandwidth. This reduction shall not start prior to bit 3 nor finish later than bit 62 of selected codewords and shall last at full value for 30 ±10 ms (refer to section 4.2.1).

The Tester shall cause the General Test Assembly to send a repeating pattern of 4 "errored" codewords in consecutive groups of 20 codewords on control channel number 58 whilst maintaining an "unerrored" control channel on channel number 62.

At some appropriate time after "errored" codewords have begun to be transmitted, the Tester shall cause the General Test Assembly to send codeword 601 on the forward control channel on channel number 62.

The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 601 in the slot immediately following. The General Test Assembly shall then be reset to transmit "unerrored" codewords continuously.

7.2.2.5.5 Radio unit response

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.2.2.6 Relinquishing due to receipt of CCSC with different SYS value

7.2.2.6.1 Test number

70206A

7.2.2.6.2 Purpose of test

To ensure that the radio unit relinquishes the current control channel, enters the control channel acquisition procedures and acquires another control channel after it has detected CCSCs with a value of SYS field different to the verified value and that, by treating these as errored codewords, the error codeword rate exceeds the prescribed level on the received forward control channel in accordance with 9.3.3.3, 9.3.4 and 9.4.1 of MPT1343.

7.2.2.6.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 58 and 62, set to give a nominal signal level at the receiver of -103 dBm.

The radio unit shall be in the idle state on control channel number 62 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70205A immediately prior to test 70206A).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70201A.

7.2.2.6.4 Test method

The Tester shall cause the General Test Assembly to insert codeword 102 with the SYS field value '101001000000001' and CCS value '0010001001010100' in place of some of the CCSCs with values as prescribed in 7.2.2.6.3.

The General Test Assembly shall insert codeword 102 in this way as the first codeword in two consecutive slots on the forward control channel number 62 followed by eight consecutive slots with the CCSC specified in 7.2.2.6.3. Data codewords shall not displace any inserted codeword 102 or the CCSC following any inserted codeword 102.

At some appropriate time after the commencement of the insertion of codewords 102, the Tester shall cause the General Test Assembly to send codeword 601 on the forward control channel on channel number 58.

The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 601 in the slot immediately following.

The General Test Assembly shall then be reset to the CCSC field values specified in test 70201A.

7.2.2.6.5 Radio unit response

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.2.3 Leaving a traffic channel and hunting for a new control channel

The following series of tests are designed to verify that the radio unit follows the correct procedures to acquire a control channel when leaving a traffic channel. Two control channels, selected from the set of Normal Hunt channel numbers, and a traffic channel are employed.

Initially the SYS fields used for both control channels differ only in FREE bits, and the radio unit is authorised to acquire both by virtue of the (AREA field).

The radio unit is forced to relinquish a traffic channel by conditions or events on that channel that shall cause the radio unit to enter the control channel acquisition procedures. Either the security number check procedure or the receipt of a random access registration request is used to verify the identity of the control channel acquired subsequently, whichever is the most appropriate.

70207A

7.2.3.1.2 Purpose of test

To ensure that the radio unit relinquishes the current traffic channel, enters the control channel acquisition procedures and re-acquires the control channel on which it was confirmed prior to being active on the traffic channel after receiving an applicable CLEAR codeword on its current traffic channel in accordance with 9.3.3.2.1 and 9.3.4.2 of MPT1343.

7.2.3.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 58 and 62 and a traffic channel on channel number 309. The radio unit shall be in the idle state on control channel number 58 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70206A immediately prior to test 70207A).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70201A.

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.3.1.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 58.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

At some appropriate time after the transmission of codeword 702 the Tester shall cause the General Test Assembly to send codeword 601 on the forward control channel on channel number 58. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.2.3.1.5 Radio unit response

The correct acquisition of the traffic channel in response to codeword 201 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 58.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000101' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

At some appropriate time after the transmission of codeword 702 the Tester shall cause the General Test Assembly to send codeword 601 on the forward control channel on channel number 62. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 601 in the slot immediately following.

Test 70209A

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 62.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate

control channels on channel numbers 58 and 62 and to replace these by two new control channels with channels numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
64	'101010010000001'	'0110101111100101'
77	'101010001001001'	'0011100110101101'

The level of channel number 77 shall be set to give a nominal value at the receiver of -103 dBm.

When both new control channels are radiating the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

At some appropriate time after the transmission of codeword 702 the Tester shall cause the General Test Assembly to send codeword 601 on the forward control channel on channel number 77. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 601 in the slot immediately following.

Tests 70210A to 70213A

Test 70210A shall be performed following the successful completion of test 70209A since the initialisation required for 70210A is the final state for 70209A.

Likewise 70211A shall follow 70210A, 70212A shall follow 70211A and 70213A shall follow 70212A.

The test method shall follow the method given for test 70209A with the following modifications:

The channel number on which codeword 201 is transmitted shall be as follows:

Test Number	Channel Number
70210A	77
70211A	85
70212A	107
70213A	120

The two new control channels to be radiated for each test shall be as follows:

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 123 and 126 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 126 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70213A immediately prior to test 70214A).

Test 70215A shall be performed following the successful completion of test 70214A since the initialisation required for 70215A is the final state for 70214A.

Likewise 70216A shall follow 70215A, 70217A shall follow 70216A and 70218A shall follow 70217A.

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 217.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 217 and 219 and to replace these by two new control channels with channel numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
258	'101010010000001'	'0110101111100101'
278	'101010010001001'	'1001001000100010'

The level of both control channels shall be set to give a nominal value at the receiver of -103dBm.

The Tester shall cause the General Test Assembly to produce "errored" codewords in the radio unit by reducing the signal to noise ratio perceived by the radio unit to 0 dB measured over a channel bandwidth. This reduction shall not start prior to bit 3 nor finish later than bit 62 of selected codewords and shall last at full value for 30 ±10 ms (Refer to Section 4.2.1).

Test 70220A shall be performed following the successful completion of test 70219A since the initialisation required for 70220A is the final state for 70219A.

Likewise 70221A shall follow 70220A, 70222A shall follow 70221A and 70223A shall follow 70222A.

The test method shall follow the method given for test 70219A with the following modifications.

The channel number on which codeword 201 is transmitted shall be as follows:

Test Number	Channel Number
70220A	278
70221A	286
70222A	361
70223A	367

The two new control channels to be radiated for each test shall be as follows:

Test Number	Channel Number	SYS	CCS
70220A	282	'101010011000001'	'0000110101100000'
	286	'101010011001001'	'1111010010100111'
70221A	358	'101010100000001'	'0000010011000100'
	361	'101010100001001'	'1111110100000011'
70222A	364	'101010101000001'	'0110001001000001'
	367	'101010101001001'	'1001101110000110'
70223A	372	'101010001000001'	'1100000001101010'
	377	'101010001001001'	'0011100110101101'

In each case the first channel number in the pair shall have "errored" codewords introduced and the second channel number shall be transmitted "unerrored".

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 372 and 377 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 377 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70223A immediately prior to test 70224A).

The forward control channels on channel numbers 372 and 377, shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with field values set as follows:

Channel Number	SYS	CCS
372	'101010001000001'	'1100000001101010'
377	'101010001001001'	'0011100110101101'

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

To verify the correct operation of the comprehensive hunt facility in accordance with 9.3.3.5 of MPT1343.

7.2.3.7.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 208 and 372 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 208 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70208A immediately prior to test 70209A).

The forward control channels on channel numbers 208 and 372 shall carry the values of fields in the CCSC as specified for test 70225A.

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.4.1.4 Test method

Test 70226A

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 208.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 208 and 372 and to replace these by two new control channels with channels numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
58	'100010011000001'	'1010011001101001'
62	'101010011001001'	'1111010010100111'

The level of channel number 62 shall be set to give a nominal value at the receiver of -103 dBm.

Test 70231A

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 120.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 117 and 120 and to replace these by two new control channels with channels numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
123	'101101000100001'	'0100010010010010'
126	'101001000100001'	'1000110100001001'

The level of channel number 126 shall be set to give a nominal value at the receiver of -103dBm.

When both new control channels are radiating the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Following the transmission of codeword 702 the General Test Assembly shall monitor the return control channel on channel number 126 for codeword 501 from the radio unit. Upon receipt of codeword 501 from the radio unit the General Test Assembly shall respond with codeword 401 in accordance with 7.2.4 and 8.2.1 of MPT1327.

Tests 70232A to 70235A

Test 70232A shall be performed following the successful completion of test 70231A since the initialisation required for 70232A is the final state for 70231A.

Likewise 70233A shall follow 70232A, 70234A shall follow 70233A and 70235A shall follow 70234A.

The test method shall follow the method given for test 70231A with the following modifications:

The channel number on which codeword 201 is transmitted shall be as follows:

Test Number	Channel Number
70232A	126
70233A	132
70234A	138
70235A	180

The two new ~~traffic~~control channels to be radiated for each test shall be as follows:

Test Number	Channel Number	SYS	CCS
70232A	129	'101100001000001'	'1111000100100011'

	132	'101001001000001'	'0100010011010001'
70233A	135	'101101001100001'	'0010001000010111'
	138	'101001001100001'	'1110101110001100'
70234A	177	'101110010000001'	'1010001001111110'
	180	'101001010000001'	'1110111101011110'
70235A	186	'101000011000001'	'1111010110110010'
	189	'101001010100001'	'0100000000000011'

In each case the second channel number in the pair shall be set to give a nominal value at the receiver of -103 dBm.

The General Test Assembly shall, in each case, monitor the second channel number in the pair for codeword 501.

7.2.4.2.5 Radio unit response

Tests 70231A to 70235A

The correct acquisition of the traffic channel in response to codeword 201 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall transmit codeword 501 (RQR) on the channel number specified in 7.2.4.2.4.

7.2.4.3 Application of AREA field personalisation

7.2.4.3.1 Test numbers

70236A to 70240A

7.2.4.3.2 Purpose of tests

To ensure that the radio unit acquires a control channel bearing an AREA sub-field value for which acquisition is authorised in its network personalisation data in preference to one that bears an unknown AREA sub-field in accordance with 9.3.4.2.4 of MPT1343.

7.2.4.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 186 and 189 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 189 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70235A immediately prior to test 70236A).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70235A.

Test 70237A shall be performed following the successful completion of test 70236A since the initialisation required for 70237A is the final state for 70236A.

Likewise 70238A shall follow 70237A, 70239A shall follow 70238A and 70240A shall follow 70239A.

The test method shall follow the method given for test 70236A with the following modifications:

The channel number on which codeword 201 is transmitted shall be as follows:

Test Number	Channel Number
70237A	219
70238A	278
70239A	286
70240A	361

The two new control channels to be radiated for each test shall be as follows:

Test Number	Channel Number	SYS	CCS
70237A	258	'101010001100001'	'0110111100110111'
	278	'101010010000001'	'0110101111100101'
70238A	282	'101010010100001'	'1100010010111000'
	286	'101010011000001'	'0000110101100000'
70239A	358	'101010011100001'	'1010001000111101'
	361	'101010100000001'	'0000010011000100'
70240A	364	'101010100100001'	'1010101110011001'
	367	'101010101000001'	'0110001001000001'

In each case the second channel number in the pair shall be set to give a nominal value at the receiver of -103 dBm.

The General Test Assembly shall, in each case, monitor the second channel number in the pair for codeword 501.

7.2.4.3.5 Radio unit response

Tests 70236A to 70240A

The correct acquisition of the traffic channel in response to codeword 201 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall transmit codeword 501 (RQR) on the channel number specified in 7.2.4.3.4.

7.2.5 120 hour memory protection for prime registration data

7.2.5.1 Test number

70241A

7.2.5.2 Purpose of test

To ensure that the radio unit is capable of maintaining an AREA field value relating to its current prime registration without corruption for a minimum period of 120 hours with all external power supplies removed in accordance with 6.2, 9.2.1 and 10.2.1 of MPT1343.

7.2.5.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 364 and 367 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 367 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70240A immediately prior to test 70241A).

The forward ~~traffic~~control channels shall carry the values of field in the CCSC as specified for test 70240A.

The forward traffic channel shall be modulated with a suitable audio test tone (for example, a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.5.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 367.

The Tester shall then turn off the radio unit, removing all external sources of power.

At a suitable time the Tester shall cause the General Test Assembly to cease to radiate control channels on channel numbers 364 and 367 and to replace these by two new control channels with channel numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
372	'101010010000001'	'0110101111100101'
377	'101010101000001'	'0110001001000001'

The level of channel number 377 shall be set to give a nominal value at the receiver of -103dBm.

When both new control channels are radiating and after a period of 120 hours has elapsed since the radio unit was switched off the Tester shall restore power to the radio unit and switch it on.

At some appropriate time the Tester shall cause the General Test Assembly to send codeword 601 on the forward control channel on channel number 377. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.2.5.5 Radio unit response

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.2.6 Leaving a control channel and hunting for a new control channel (B personalisation)

The following is a repeat of the tests specified in 7.2.2 but with values specified appropriate to the B personalisation.

7.2.6.1 Leaving upon receipt of MOVE

7.2.6.1.1 Test number

70201B

7.2.6.1.2 Purpose of test

To ensure that the radio unit leaves the current control channel, enters the control channel acquisition procedures and acquires the nominated control channel after receiving an applicable MOVE codeword on its current control channel in accordance with 9.3.3.2.2, 9.3.4 and 9.4.1 of MPT1343.

7.2.6.1.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160. The radio unit shall be in the idle state on control channel number 157 immediately prior to the test. (This may be achieved more easily if the radiation of the forward control channel on channel number 160 is delayed until after the radio unit has acquired channel number 157).

The forward control channels on channel numbers 157 and 160 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with field values set as follows:

Channel Number	SYS	CCS
157	'000101000010001'	'0101011100101101'
160	'000101000011001'	'1010111011101010'

7.2.6.1.4 Test method

The Tester shall use the General Test Assembly to send MOVE codeword number 703 with the value of the CONT field set to '0001100111' within the forward message stream on channel number 157.

At some appropriate time the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 160. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following.

7.2.6.1.5 Radio unit response

The radio unit shall respond to codeword 603 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

The Tester shall cause the General Test Assembly to transmit data codeword 802 continuously on forward control channel number 157 in the form of a contiguous stream. Accordingly no CCSC codewords shall be transmitted following the first transmission of data codeword 802.

At some appropriate time after the first transmission of codeword 802, but prior to a period TS has been exceeded, the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 160. At some appropriate time after the period TS has been exceeded the Tester shall again cause the General Test Assembly to send codeword 603 on forward control channel number 160. The General Test Assembly shall monitor the return control channel for a response from the radio unit to both transmissions of codeword 603 in the slot immediately following transmission of the codewords.

At some appropriate time after the first transmission of codeword 802, but prior to a period TS has been exceeded, the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 160. The General Test Assembly shall monitor the return control channel for a response from the radio unit to the transmission of codeword 603 in the slot immediately following transmission of the codeword.

7.2.6.3.5 Radio unit response

The radio unit shall respond to the transmission of codeword 603 (AHYC) with codeword 801 (SAMIS) in the control response slot.

7.2.6.4 Leaving upon change of LAB field value

7.2.6.4.1 Test number

70204B

7.2.6.4.2 Purpose of test

To ensure that the radio unit leaves the current control channel, enters the control channel acquisition procedures and acquires another control channel after it has received, in two consecutive decodable CCSCs, a value of LAB field which indicates that the control category of the radio unit is no longer permitted access on the current control channel in accordance with 9.3.3.3, 9.3.4 and 9.4.1 of MPT1343.

7.2.6.4.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160. The radio unit shall be in the idle state on control channel number 160 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70203B immediately prior to test 70204B).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70201B.

7.2.6.4.4 Test method

The Tester shall cause the General Test Assembly to change the SYS field value radiated in one of the CCSCs on the forward control channel number 160 to '000101000011100' (with a corresponding change in CCS to '0111011000101001') thus modifying the value of the LAB field to '100'.

At some appropriate time after the transmission of the CCSC with a different value of SYS field the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 157. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following:

Subsequently the Tester shall cause the General Test Assembly to change the SYS field value radiated by all CCSCs on the forward control channel number 160 to '000101000011100'. At some appropriate time after this change the Tester shall again cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 157.

The General Test Assembly shall monitor the return control channel for a response from the radio unit to this further transmission of codeword 603 in the slot immediately following.

The General Test Assembly shall then be reset to transmit the values of SYS field specified in test 70201B.

7.2.6.4.5 Radio unit response

The radio unit shall not respond to the first transmission of codeword 603 (AHYC) and shall respond to the second transmission with codeword 801 (SAMIS) in the correct response slot.

7.2.6.5 Leaving due to errors

7.2.6.5.1 Test number

70205B

7.2.6.5.2 Purpose of test

To ensure that the radio unit leaves the current control channel, and enters the control channel acquisition procedures and acquires another control channel after it has detected errors exceeding the prescribed rate on the received forward control channel in accordance with 9.3.3.3, 9.3.4 and 9.4.1 of MPT1343.

7.2.6.5.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160, set to give a nominal signal level at the receiver of -103 dBm.

The radio unit shall be in the idle state on control channel number 157 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70204B immediately prior to test 70205B).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70201B.

7.2.6.5.4 Test method

The Tester shall cause the General Test Assembly to produce "errored" codewords in the radio unit by reducing the signal to noise ratio perceived by the radio unit to 0 dB measured over a channel bandwidth. This reduction shall not start prior to bit 3 nor finish later than bit 62 of selected codewords and shall last at full value for 30 ±10 ms (Refer to Section 4.2.1).

The Tester shall cause the General Test Assembly to send a repeating pattern of 2 "errored" codewords in consecutive groups of 4 codewords on control channel number 157 whilst maintaining an "unerrored" control channel on channel number 160.

At some appropriate time after "errored" codewords have begun to be transmitted, the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 160.

The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following.

The General Test Assembly shall then be reset to transmit "unerrored" codewords continuously.

7.2.6.5.5 Radio unit response

The radio unit shall respond to codeword 603 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.2.6.6 Leaving due to receipt of CCSC with different SYS value

7.2.6.6.1 Test number

70206B

7.2.6.6.2 Purpose of test

To ensure that the radio unit leaves the current control channel, enters the control channel acquisition procedures and acquires another control channel after it has detected CCSCs with a value of SYS field different to the verified value and that, by treating these as errored codewords, the error codeword rate exceeds the prescribed level on the received forward control channel in accordance with 9.3.3.3, 9.3.4 and 9.4.1 of MPT1343.

7.2.6.6.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160, set to give a nominal signal level at the receiver of -103 dBm.

The radio unit shall be in the idle state on control channel number 160 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70205B immediately prior to test 70206B).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70201B.

7.2.6.6.4 Test method

The Tester shall cause the General Test Assembly to insert codeword 102 with the SYS field value '000101000100001' and CCS value '0011001111000001' in place of some of the CCSCs with values as prescribed in 7.2.6.6.3. The General Test Assembly shall insert codeword 102 in this way as the first codeword in one slot on the forward control channel number 160 followed by one slot with the CCSC specified in 7.2.6.6.3. Data codewords shall not displace any inserted codeword 102 or the CCSC following any inserted codeword 102.

At some appropriate time after the commencement of the insertion of codewords 102, the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 157.

The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following.

The General Test Assembly shall then be reset to the CCSC field values specified in test 70201B.

7.2.6.6.5 Radio unit response

The radio unit shall respond to codeword 603 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.2.7 Leaving a traffic channel and hunting for a new control channel

The following series a repeat of the tests specified in 7.2.3 but with values specified appropriate to the B personalisation.

7.2.7.1 Resuming a control channel

7.2.7.1.1 Test number

70207B

7.2.7.1.2 Purpose of test

To ensure that the radio unit leaves the current traffic channel, enters the control channel acquisition procedures and re-acquires the control channel on which it was confirmed prior to being active on the traffic channel after receiving an applicable CLEAR codeword on its current traffic channel in accordance with 9.3.3.2.1 and 9.3.4.2 of MPT1343.

7.2.7.1.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160 and a traffic channel on channel number 309. The radio unit shall be in the idle state on control channel number 157 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70206B immediately prior to test 70207B).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70201B.

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.7.1.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 157.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

At some appropriate time after the transmission of codeword 702 the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 157. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following.

7.2.7.1.5 Radio unit response

The correct acquisition of the traffic channel in response to codeword 204 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall respond to codeword 603 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.2.7.2 Control channel acquisition by single channel hunt

7.2.7.2.1 Test number

70208B

7.2.7.2.2 Purpose of test

To ensure that the radio unit leaves the current traffic channel, enters the control channel acquisition procedures and acquires a nominated control channel after receiving an applicable CLEAR codeword on its current traffic channel in accordance with 9.3.3.2 and 9.3.4 of MPT1343.

7.2.7.2.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 157 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70207B immediately prior to test 70208B). The forward control channels shall carry the values of fields in the CCSC as specified for test 70201B.

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.7.2.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 157.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN

field set to '0011111100' and the CONT field set to '0001100111' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

At some appropriate time after the transmission of codeword 702 the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 160. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following.

7.2.7.2.5 Radio unit response

The correct acquisition of the traffic channel in response to codeword 204 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall respond to codeword 603 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.2.7.3 Preferential hunt

7.2.7.3.1 Test numbers

70209B to 70213B

7.2.7.3.2 Purpose of tests

To ensure that the radio unit leaves the current traffic channel, enters the control channel acquisition procedures and acquires a control channel as a result of a preferential hunt after receiving an applicable CLEAR codeword on its current traffic channel but being unable to reaquire the control channel on which it was confirmed prior to being active on the traffic channel in accordance with 9.3.3.2.1, 9.3.3 and 9.3.4 of MPT1343.

7.2.7.3.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 160 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70208B immediately prior to test 70209B).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70201B.

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.7.3.4 Test method

Test 70209B

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 160.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 157 and 160 and to replace these by two new control channels with channels numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
163	'000101000110001'	'1111100001110000'
166	'000101000011001'	'1010111011101010'

The level of channel number 166 shall be set to give a nominal value at the receiver of -103dBm.

When both new control channels are radiating the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

At some appropriate time after the transmission of codeword 702 the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 166. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following.

Tests 70210B to 70213B

Test 70210B shall be performed following the successful completion of test 70209B since the initialisation required for 70210B is the final state for 70209B.

Likewise 70211B shall follow 70210B, 70212B shall follow 70211B and 70213B shall follow 70212B.

The test method shall follow the method given for test 70209B with the following modifications:

The channel number on which codeword 204 is transmitted shall be as follows:

Test number	Channel Number
70210B	166
70211B	172
70212B	178
70213B	247

The two new control channels to be radiated for each test shall be as follows:

7.2.7.4.1 Test numbers

70214B to 70218B

7.2.7.4.2 Purpose of tests

To ensure that the radio unit leaves the current traffic channel, enters the control channel acquisition procedures and acquires a control channel as a result of a normal hunt at the higher level after receiving an applicable CLEAR codeword on its current traffic channel, but being unable to reacquire the control channel on which it was confirmed prior to being active on the traffic channel, or an alternative control channel with the same AREA code in accordance with 9.3.3.2.1, 9.3.3.3, 9.3.3.4 and 9.3.4 of MPT1343.

7.2.7.4.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 254 and 281 and a traffic channel on channel number 309.
The radio unit shall be in the idle state on control channel number 281 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70213B immediately prior to test 70214B).

The forward control channels on channel numbers 254 and 281 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with field values set as follows:

Channel Number	SYS	CCS
254	'000101000110001'	'1111100001110000'
281	'000101000011001'	'1010111011101010'

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.7.4.4 Test method

Test 70214B

The Tester shall use the General Test Assembly to send codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 281.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 254 and 281 and to replace these by two new control channels with channel numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
284	'000101000110001'	'1111100001110000'
287	'000101000111001'	'0000000110110111'

The level of channel number 287 shall be set to give a nominal value at the receiver of -103 dBm.

When both new control channels are radiating the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Following the transmission of codeword 702 the General Test Assembly shall monitor the return control channel on channel number 284 for codeword 502 from the radio unit. Upon receipt of codeword 502 from the radio unit the General Test Assembly shall respond with codeword 403 in accordance with 7.2.4 and 8.2.1 of MPT1327.

Tests 70215B to 70218B

Test 70215B shall be performed following the successful completion of test 70214B since the initialisation required for 70215B is the final state for 70214B.

Likewise 70216B shall follow 70215B, 70217B shall follow 70216B and 70218B shall follow 70217B.

The test method shall follow the method given for test 70214B with the following modifications:

The channel number on which codeword 204 is transmitted shall be as follows:

Test number	Channel Number
70215B	284
70216B	290
70217B	357
70218B	363

The two new control channels to be radiated for each test shall be as follows:

Test number	Channel Number	SYS	CCS
70215B	290	'000101001010001'	'0011000110101000'
	293	'000101001011001'	'1100100001101111'
70216B	357	'000101000100001'	'0011001111000001'
	360	'000101000101001'	'1100101000000110'
70217B	363	'000101000010001'	'0101011100101101'
	366	'000101000011001'	'1010111011101010'
70218B	157	'000101001000001'	'1111101000011001'
	160	'000101001001001'	'0000001111011110'

In each case the second channel number in the pair shall be set to give a nominal value at the receiver of -103 dBm.

The General Test Assembly shall, in each case, monitor the first channel number in the pair for codeword 502.

7.2.7.4.5 Radio unit response

Tests 70214B to 70218B

The correct acquisition of the traffic channel in response to codeword 204 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall transmit codeword 502 (RQR) on the channel number specified in 7.2.7.4.4.

7.2.7.5 Error checking prior to confirmation

7.2.7.5.1 Test numbers

70219B to 70223B

7.2.7.5.2 Purpose of tests

To ensure that the radio unit does not confirm a control channel with an excessive codeword error rate during the hunting procedures in accordance with 9.3.4.3 and 9.3.4.4 of MPT1343.

7.2.7.5.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 157 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70218B immediately prior to test 70219B).

The forward control channels on channel numbers 157 and 160 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with field values set as follows:

Channel Number	SYS	CCS
157	'000101001000001'	'1111101000011001'
160	'000101001001001'	'0000001111011110'

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.7.5.4 Test method

Test 70219B

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 157.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 157 and 160 and to replace these by two new control channels with channel numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
163	'000101001010001'	'0011000110101000'
166	'000101001011001'	'1100100001101111'

The level of both control channels shall be set to give a nominal value at the receiver of -103dBm.

The Tester shall cause the General Test Assembly to produce "errored" codewords in the radio unit by reducing the signal to noise ratio perceived by the radio unit to 0 dB measured over a channel bandwidth. This reduction shall not start prior to bit 3 nor finish later than bit 62 of selected codewords and shall last at full value for 30 ±10 ms (Refer to Section 4.2.1).

The Tester shall cause the General Test Assembly to send a repeating pattern of one "errored" codeword in consecutive groups of 15 codewords on control channel number 163 whilst maintaining an "unerrored" control channel on channel number 166.

At some appropriate time after both new control channels are radiating and "errored" codewords have begun to be transmitted, the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Following the transmission of codeword 702 the General Test Assembly shall monitor the return control channel on channel number 166 for codeword 502 from the radio unit. Upon receipt of codeword 502 from the radio unit the General Test Assembly shall respond with codeword 403 in accordance with 7.2.4 and 8.2.1 of MPT1327.

Tests 70220B to 70223B

Test 70220B shall be performed following the successful completion of test 70219B since the initialisation required for 70220B is the final state for 70219B.

Likewise 70221B shall follow 70220B, 70222B shall follow 70221B and 70223B shall follow 70222B.

The test method shall follow the method given for test 70219B with the following modifications:

The channel number on which codeword 204 is transmitted shall be as follows:

Test number	Channel Number
70220B	166
70221B	172
70222B	178
70223B	247

The two new control channels to be radiated for each test shall be as follows:

Test number	Channel Number	SYS	CCS
70220B	169	'000101000100001'	'0011001111000001'
	172	'000101000101001'	'1100101000000110'
70221B	175	'000101000010001'	'0101011100101101'
	178	'000101000011001'	'1010111011101010'
70222B	181	'000101000110001'	'1111100001110000'
	247	'000101000111001'	'0000000110110111'
70223B	254	'000101001000001'	'1111101000011001'
	281	'000101001001001'	'0000001111011110'

In each case the first channel number in the pair shall have "errored" codewords introduced and the second channel number shall be transmitted "unerrored".

The General Test Assembly shall, in each case, monitor the second channel number in the pair for codeword 502.

7.2.7.5.5 Radio unit response

Tests 70219B to 70223B

The correct acquisition of the traffic channel in response to codeword 204 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall transmit codeword 502 (RQR) on the channel number specified in 7.2.7.5.4.

7.2.7.6 (Section not used).

7.2.7.7 Comprehensive hunt suppression facility

7.2.7.7.1 Test number

70225B

7.2.7.7.2 Purpose of test

To verify the correct operation of the comprehensive hunt suppression facility by network personalisation in accordance with 9.3.3.5 of MPT1343.

7.2.7.7.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 208 and 281 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 281 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70223B immediately prior to test 70225B).

The forward control channels on channel numbers 208 and 281 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with field values set as follows:

Channel Number	SYS	CCS
208	'000101001001001'	'0000001111011110'
281	'000101001001001'	'0000001111011110'

The forward traffic channel shall be modulated wih a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.7.7.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 281.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate the control channel on channel number 281.

After a suitable time the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

At some appropriate time after the transmission of codeword 702 the Tester shall cause the General Test Assembly to send codeword 603 on the forward control channel on channel number 208. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 603 in the slot immediately following.

7.2.7.7.5 Radio unit response

The correct acquisition of the traffic channel in response to codeword 204 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall not respond to codeword 603 (AHYC).

7.2.8 Use of acquisition authorisation data (B personalisation)

The following is a repeat of the tests specified in 7.2.4 but with values specified appropriate to the B personalisation.

7.2.8.1 Application of OPID field personalisation

7.2.8.1.1 Test numbers

70226B to 70230B

7.2.8.1.2 Purpose of tests

To ensure that a radio unit acquires a control channel bearing the OPID (Network Identity) sub-field value of the selected network in preference to one that bears an unknown OPID sub-field in accordance with 9.3.4.2.4 of MPT1343.

7.2.8.1.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 254 and 281 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 281 immediately prior to the test. (This may be achieved more easily if the radiation of the forward control channel

on channel number 254 is delayed until after the radio unit has acquired channel number 281).

The forward control channels on channel numbers 254 and 281 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with field values set as follows:

Channel Number	SYS	CCS
254	'000101001000001'	'1111101000011001'
281	'000101001001001'	'0000001111011110'

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.8.1.4 Test method

Test 70226B

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 281.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 254 and 281 and to replace these by two new control channels with channels numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
284	'000101011010001'	'1111110010100010'
287	'000101001011001'	'1100100001101111'

The level of channel number 287 shall be set to give a nominal value at the receiver of -103dBm.

When both new control channels are radiating the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to '0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Following the transmission of codeword 702 the General Test Assembly shall monitor the return control channel on channel number 287 for codeword 502 from the radio unit. Upon receipt of codeword 502 from the radio unit the General Test Assembly shall respond with codeword 403 in accordance with 7.2.4 and 8.2.1 of MPT1327.

Tests 70227B to 70230B

Test 70227B shall be performed following the successful completion of test 70226B since the initialisation required for 70227B is the final state for 70226B.

Likewise 70228B shall follow 70227B, 70229B shall follow 70228B and 70230B shall follow 70229B.

The test method shall follow the method given for test 70226B with the following modifications:

The channel number on which codeword 204 is transmitted shall be as follows:

Test number	Channel Number
70227B	287
70228B	293
70229B	360
70230B	366

The two new control channels to be radiated for each test shall be as follows:

Test number	Channel Number	SYS	CCS
70227B	290	'000111000100001'	'0000111000100001'
	293	'000101000101001'	'1100101100010011'
70228B	357	'010101000110001'	'0101111110000101'
	360	'000101000111001'	'1100100001101111'
70229B	363	'010001001000001'	'1001011000011110'
	366	'000101001001001'	'1100100001101111'
70230B	157	'000110001010001'	'1011010100010011'
	160	'000101001011001'	'1100100001101111'

In each case the second channel number in the pair shall be set to give a nominal value at the receiver of -103 dBm.

The General Test Assembly shall, in each case, monitor the second channel number in the pair for codeword 502.

7.2.8.1.5 Radio unit response

Tests 70226B to 70230B

The correct acquisition of the traffic channel in response to codeword 204 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall transmit codeword 502 (RQR) on the channel number specified in 7.2.8.1.4.

7.2.8.2 Application of ZONE field personalisation

No tests specified for B personalisation.

7.2.8.3 Application of AREA field personalisation

7.2.8.3.1 Test numbers

70236B to 70240B

7.2.8.3.2 Purpose of tests

To ensure that the radio unit acquires a control channel bearing an AREA sub-field value for which acquisition is authorised in its network personalisation data in preference to one that bears an unknown AREA sub-field in accordance with 9.3.4.2.4 of MPT1343.

7.2.8.3.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating two forward control channels on channel numbers 157 and 160 and a traffic channel on channel number 309.

The radio unit shall be in the idle state on control channel number 160 immediately prior to the test. (This may be conveniently achieved by the successful completion of test 70230B immediately prior to test 70236B).

The forward control channels shall carry the values of fields in the CCSC as specified for test 70230B.

The forward traffic channel shall be modulated with a suitable audio test tone (for example a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation).

7.2.8.3.4 Test method

Test 70236B

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 160.

Once the Tester has confirmed that the radio unit is active on the traffic channel by aural detection of the test tone he shall cause the General Test Assembly to cease to radiate control channels on channel numbers 157 and 160 and to replace these by two new control channels with channels numbers and values of fields in the CCSC (codeword 102) as follows:

Channel Number	SYS	CCS
163	'000101001110001'	'1001111011110101'
166	'000101000011001'	'1010111011101010'

The level of channel number 166 shall be set to give a nominal value at the receiver of -103dBm.
When both new control channels are radiating the Tester shall cause the General Test Assembly to interrupt the modulating tone on traffic channel number 309 and transmit codeword 702 with the CHAN field set to '0011111100' and the CONT field set to

'0000000000' in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Following the transmission of codeword 702 the General Test Assembly shall monitor the return control channel on channel number 166 for codeword 502 from the radio unit. Upon receipt of codeword 502 from the radio unit the General Test Assembly shall respond with codeword 403 in accordance with 7.2.4 and 8.2.1 of MPT1327.

Tests 70237B to 70240B

Test 70237B shall be performed following the successful completion of test 70236B since the initialisation required for 70237B is the final state for 70236B.

Likewise 70238B shall follow 70237B, 70239B shall follow 70238B and 70240B shall follow 70239B.

The test method shall follow the method given for test 70236B with the following modifications:

The channel number on which codeword 204 is transmitted shall be as follows:

Test number	Channel Number
70237B	166
70238B	172
70239B	178
70240B	247

The two new control channels to be radiated for each test shall be as follows:

Test number	Channel Number	SYS	CCS
70237B	169	'000101001110001'	'1001111011110101'
	172	'000101000100001'	'0011001111000001'
70238B	175	'000101001110001'	'1001111011110101'
	178	'000101000110001'	'1111100001110000'
70239B	181	'000101001110001'	'1001111011110101'
	247	'000101001000001'	'1111101000011001'
70240B	254	'000101001110001'	'1001111011110101'
	281	'000101001010001'	'0011000110101000'

In each case the second channel number in the pair shall be set to give a nominal value at the receiver of -103 dBm.

The General Test Assembly shall, in each case, monitor the second channel number in the pair for codeword 502.

7.2.8.3.5 Radio unit response

Tests 70236B to 70240B

The correct acquisition of the traffic channel in response to codeword 204 (GTC) shall be confirmed by aural detection of the test tone from the radio unit transducer.

After transmission of codeword 702 (CLEAR) the tone shall no longer be heard from the radio unit.

The radio unit shall transmit codeword 502 (RQR) on the channel number specified in 7.2.8.3.4.

7.3 (Section not used).

7.4 Registration

7.4.1 Introduction

The tests in the following sections are to be applied using the A personalisation only: see sections 3.1 and 3.2 of this specification.

The Tester shall carry out the test procedures specified in the following sections which are designed to test that the radio unit is able to send registration requests and maintain registration records in accordance with MPT1343.

7.4.2 General test procedures

In the following tests the radio unit shall be connected to the General Test Assembly which shall be radiating one control channel on one of three specified channel numbers. For each channel number the value of AREA sub-field in the SYS field specified is chosen from three candidate values as follows:

Channel number	Candidate values of AREA sub-field	Registration record code
58	'0010001'	A
	'0010100'	D
	'0010111'	G
282	'0010010'	B
	'0010101'	E
	'0011000'	H
377	'0010011'	C
	'0010110'	F
	'0100010'	J

The starting conditions of most tests are dependant on the final conditions at the end of the previous test. Therefore the tests described below shall follow only in the prescribed order. Except as otherwise specified, the tests shall be carried out within the registration timeout periods present in the radio unit and without switch-off or network changing of the radio unit. No general rules can be given for resumption of testing if the tests suffer a significant interruption. Testers should be aware that incorrect resumption of testing may result in drawing incorrect conclusions from the radio unit response.

A diagram is appended at the end of each test, which represents the registration records held within the radio unit during the test which is described. These diagrams are provided for illustrative purposes only since the test procedures do not allow these records to be examined directly.

In the representations of registration records, the codes A to J are used to denote registration records containing the AREA sub-field values as detailed in the tabulation above. An additional character appended to the letter is used to denote the type of registration record as follows:

undefined (-), normal (0), or temporary (1).

7.4.3 Test procedures

7.4.3.1 Registration and registration records

7.4.3.1.1 Test number

70401A

7.4.3.1.2 Purpose of test

To initialise the radio unit for the test sequence.

To establish that the radio unit is capable of sending registration requests and to establish a known primary registration record and value of NA for subsequent tests in accordance with 10.4.1 and 10.7 of MPT1343.

7.4.3.1.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 58. The forward control channel on channel number 58 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101010001000001' and the value of the CCS field set to '1100000001101010'.

The radio unit shall be switched off prior to connection to the General Test Assembly and remain switched off until the commencement of the test.

7.4.3.1.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored, and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

The radio unit shall be switched on. After a suitable period (for channel hunting the Tester shall cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101010001000001' and the value of NA set to '01'.

The Tester shall then cause the General Test Assembly to change the value of SYS field in all codewords 102 radiated on the forward control channel on channel number 58 to '101001000100001' with a corresponding change in CCS to '1000110100001001' and shall monitor the return control channel for codeword 501 from the radio unit.

After the General Test Assembly has received codeword 501 from the radio unit and has acknowledged this request with codeword 401 the Tester shall cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101001000100001' and the value of NA set to '11'.

7.4.3.1.5 Radio unit response

The radio unit may transmit codeword 501 (RQR) as a random access request after being switched on depending upon the registration record value stored in the radio unit prior to the test taking place. After the value of the SYS field is changed the radio unit shall transmit codeword 501 (RQR) as a random access request.

7.4.3.1.6 States of radio unit registration records during test

(For information only).

1	2	3	4	
?	J0	A0-	A0	Prime
			NULL	Second
			NULL	Third

1 - At commencement of test

2 - Upon first successful registration and following receipt of first BCAST message

3 - Upon second successful registration

4 - On receipt of second BCAST message

7.4.3.2 Retention of primary registration at switch-off

7.4.3.2.1 Test number

70402A

7.4.3.2.2 Purpose of test

To establish that the radio unit retains the primary registration when switched off in accordance with 10.2.1 a(ii), 10.4.1 and 10.3 of MPT1343.

7.4.3.2.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 58.

7.4.3.3.2 Purpose of test

To establish that the radio unit is capable of accepting secondary and tertiary registration records and that these records are retained by the radio unit in acordance with 10.4.1, 10.2.1 and 10.3 (iv) of MPT1343.

7.4.3.3.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 58.

The forward control channel on channel number 58 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCS field set to '1000110100001001'.

The radio unit shall be in the state prevailing at the end of test 70402A.

7.4.3.3.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

The Tester shall cause the General Test Assembly to cease to radiate the control channel on channel number 58 and to replace this by a control channel on channel number 282 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001001001' and the value of the CCS field set to'1011110100010110'.

After the General Test Assembly has received codeword 501 from the radio unit and has acknowledged this request with codeword 401 the Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 282 and to replace this by a control channel on channel number 377 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to'101001001100001' and the value of the CCS field set to '1110101110001100'.

Finally after the General Test Assembly has again received codeword 501 from the radio unit and has acknowledged this request with codeword 401 the Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 377 and to replace this by a control channel on channel number 58 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCSC field set to'1000110100001001'.

7.4.3.3.5 Radio unit response

Each time that the control channel number is changed it shall be followed by a transmission of codeword 501 from the radio unit with the exception of the final change in channel number to 58 which shall not result in a transmission by the radio unit.

7.4.3.3.6 States of radio unit registration records during test

(For information only).

1	2	3
A0	B-	C-
NULL	A0	B-

NULL	NULL	NULL

1 - At commencement of test.
2 - After First ACK(QUAL='0').
3 - After Second ACK(QUAL='0').

7.4.3.4 Reduction of number of registration records

7.4.3.4.1 Test number

70404A

7.4.3.4.2 Purpose of test

To establish that the radio unit responds correctly when instructed to reduce the total number of registration records to two in acordance with 10.4.1 and 10.7 of MPT1343.

7.4.3.4.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 58.

The forward control channel on channel number 58 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCS field set to '1000110100001001'.

The radio unit shall be in the state prevailing at the end of test 70403A.

7.4.3.4.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

The Tester shall cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101001000100001' and the value of NA set to '10'.

7.4.3.4.5 Radio unit response

The radio unit shall transmit codeword 501 (RQR) following the transmission by the General Test Assembly of codeword 704 (BCAST).

7.4.3.4.6 States of radio unit registration records during test

(For information only).

1	2	3	
C	C-	A0	Prime
B-	B-	C-	Second

A0	Third

1 - At commencement of test.
2 - On receipt of BCAST SYSDEF '00011'.
3 - After General Test Assembly sends ACK(QUAL='0').

7.4.3.5 Displacement of Primary record on implicit response

7.4.3.5.1 Test number

70405A

7.4.3.5.2 Purpose of test

To establish that an implicit registration response results in the displacement of the primary registration record in accordance with 10.4.1 and 10.5 of MPT1343. (The presence of the correct primary registration record after an implicit registration response is verified by displacing it and checking its presence as a secondary registration record).

7.4.3.5.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 58.

The forward control channel on channel number 58 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCS field set to '1000110100001001'.

The radio unit shall be in the state prevailing at the end of test 70404A.

7.4.3.5.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327. Further the General Test Assembly shall respond to any transmission of codeword 503 (RQS) from the radio unit with codeword 404 (ACKB(QUAL='0')), in accordance with 7.2.4 and 9.1.1.1 of MPT1327.

The Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 58 and to replace this by a control channel on channel number 377 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001100001' and the value of the CCS field set to '1110101110001100'.

After a suitable time has elapsed the Tester shall cause the radio unit to attempt a simple speech call request to unit PFIX=39 IDENT=2079 (see 3.3).

After the General Test Assembly has transmitted codeword 404 following receipt of codeword 503 from the radio unit the Tester shall then cause the General Test Assembly

(For information only).

1	2	3	
A0	C-	B-	Prime
C-	A0	C-	Second

1 - At commencement of test.
2 - After General Test Assembly sends ACKB(QUAL='0').
3 - After General Test Assembly sends ACK(QUAL='0').

7.4.3.6 Reduction of number of registration records to one

7.4.3.6.1 Test number

70406A

7.4.3.6.2 Purpose of test

To establish that the radio unit responds correctly when instructed to reduce the total number of registration records to one in accordance with 10.4.1 and 10.7 of MPT1343.

7.4.3.6.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 377.

The forward control channel on channel number 377 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001100001' and the value of the CCS field set to '1110101110001100'.

The radio unit shall be in the state prevailing at the end of test 70405A.

7.4.3.6.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')).

The Tester shall cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101001001100001' and the value of NA set to '01'.

The Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 377 and to replace this by a control channel on channel number 282 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001001001' and the value of the CCS field set to '1011110100010110'.

7.4.3.6.5 Radio unit response

The radio unit shall transmit codeword 501 (RQR) subsequent to the transmission by the General Test Assembly of codeword 704 (BCAST). The radio unit shall again transmit codeword 501 subsequent to the change from channel number 377 to channel number 282.

7.4.3.6.6 States of radio unit registration records during test

(For information only).

1	2	3	4	
B-	B-	C0	B-	Prime
C-				Second

1 - At commencement of test.
2 - On receipt of BCAST SYSDEF '00011'.
3 - After General Test Assembly sends first ACK(QUAL='0').
4 - After General Test Assembly sends second ACK(QUAL='0').

7.4.3.7 Correct response to registration failure ACKX(QUAL=1)

7.4.3.7.1 Test number

70407A

7.4.3.7.2 Purpose of test

To establish the correct response to registration failure ACKX(QUAL='1') in accordance with 8.2.2 of MPT1327 and 10.4.1 of MPT1343.

7.4.3.7.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282.

The forward control channel on channel number 282 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001001001' and the value of the CCS field set to '1011110100010110'.

The radio unit shall be in the state prevailing at the end of test 70406A.

7.4.3.7.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), except as otherwise specified.

The Tester shall cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101001001001001' and the value of NA set to '10'.

The Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 282 and to replace this by a control channel on channel number 58 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCS field set to '1000110100001001'.

The General Test Assembly shall respond to the first tranmission of codeword 501 by the radio unit subsequent to the change of channel from channel number 282 to channel number 58 with codeword 405 (ACKX(QUAL='1')), in accordance with 7.2.4 and 8.2.1 of MPT1327. Any subsequent transmission of codeword 501 by the radio unit shall be responded to by codeword 401 as specified above.

7.4.3.7.5 Radio unit response

The radio unit shall transmit codeword 501 (RQR) subsequent to the change of channel number. It shall again transmit codeword 501 (RQR) within a suitable period (to allow for channel hunting) of receiving codeword 405 from the General Test Assembly.

7.4.3.7.6 States of radio unit registration records during test

(For information only).

1	2	3	
B-	B0	A-	Prime
	NULL	B0	Second

1 - At commencement of test.
2 - After BCAST NA='10'.
3 - After successful registration.

7.4.3.8 Registration denial and inhibition of random access

7.4.3.8.1 Test number

70408A

7.4.3.8.2 Purpose of test

To establish that registration denied ACKX(QUAL='0') results in inhibition of random access call requests, and that at least eight registration denied records are held by the radio unit in accordance with 7.2.4 and 8.2.1 of MPT1327 and 10.2.1, 10.4 and 10.5 of MPT1343.

7.4.3.8.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 58.

The forward control channel on channel number 58 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCS field set to '1000110100001001'.

The radio unit shall be in the state prevailing at the end of test 70407A.

7.4.3.8.4 Method

For the duration of the first part of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 417 (ACKX(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

The Tester shall initiate a sequence of channel changes by causing the General Test Assembly to cease to radiate the control channel on channel number 58 and to replace this by a control channel on channel number 377 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101010001000001' and the value of the CCS field set to '1100000001101010'.

After the General Test Assembly has received codeword 501 from the radio unit and has acknowledged this request with codeword 417 the Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 377 and to replace this by a control channel on channel number 282 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001100001001' and the value of the CCS field set to '0111100110111000'.

This procedure shall be repeated for the following new combinations of channel number, SYS field value and CCS value.

Channel Number	SYS	CCS
58	'101001011100001'	'0010011010000110'
377	'101001011000001'	'1000100111011011'
282	'101001010101001'	'1011100111000100'
58	'101001010000001'	'1110111101011110'
377	'101001001100001'	'1110101110001100'
282	'101001001001001'	'1011110100010110'

After this first sequence has been completed and the General Test Assembly has received codeword 501 from the radio unit on channel number 282 and has acknowledged this request with codeword 417 the Tester shall, after a suitable time has elapsed, cause the radio unit to attempt a simple speech call request to unit PFIX=39 IDENT=2079 (see 3.3), noting any audible of visual confidence indicator states which occur as a result of the call request.

The Tester shall then initiate a second sequence of channel changes by causing the General Test Assembly to cease to radiate the control channel on channel number 282 and to replace this by a control channel on channel number 377 which shall carry codeword 102 at the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001100001' and the value of the CSC field set to '1110101110001100'.

After a suitable time has elapsed the Tester shall again cause the radio unit to attempt a simple speech call request to unit PFIX=39 IDENT=2079 (see 7.4.2), noting any audible or visual confidence indicator states which occur as a result of the call request.

This procedure of channel change and initiation of a simple speech call request shall be repeated for the following new combinations of channel number, SYS field value and CCS value:

Channel Number	SYS	CCS
58	'101001010000001'	'1110111101011110'
282	'101001010101001'	'1011100111000100'
58	'101001011100001'	'0010011010000110'
377	'101010001000001'	'1100000001101010'
58	'101001000100001'	'1000110100001001'

After the last change of channel number (i.e., 377 to 58) the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit on control channel number 58 with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

Further the General Test Assembly shall respond to any transmission of codeword 503 (RQS) from the radio unit with codeword 605 (AHY) followed by codeword 404 (ACKB(QUAL='0')), in accordance with 7.2.4 and 9.1.1.1 of MPT1327.

7.4.3.8.5 Radio unit response

During the first sequence of changes in control channel number the radio unit shall transmit codeword 501 (RQR) once on each new control channel.

(For information only).

Denied Registration Record

1	2	3	4	5	6	7	8	
J	J	J	J	J	J	J	J	First
	H	H	H	H	H	H	H	Second
		G	G	G	G	G	G	Third
			F	F	F	F	F	Fourth
				E	E	E	E	Fifth
					D	D	D	Sixth
						C	C	Seventh
							B	Eighth

1 - After first transmission of codeword 406
2 - After second transmission of codeword 406
3 - After third transmsission of codeword 406
4 - After fourth transmission of codeword 406

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

The Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 58 and to replace this by a control channel on channel number 377 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001100001' and the value of the CCS field set to '1110101110001100'.

After a suitable time has elapsed the Tester shall switch the radio unit off in accordance with the manufacturer's instructions.

After a short time the Tester shall switch the radio unit on in accordance with the manufacturer's instructions.

7.4.3.9.5 Radio unit response

The radio unit shall make no transmission prior to being switch off. Within a suitable period (to allow for channel hunting) of being switched on it shall transmit codeword 501 (RQR).

7.4.3.9.6 States of radio unit registration records during test

(For information only).

1	2	3	
A-	A0	AC-	Prime
NULL	NULL	A0	Second

1 - At commencement of test.
2 - On unit being switched on.
3 - At end of test.

7.4.3.10 Deletion of registration records after TD timeout

7.4.3.10.1 Test number

70410A

7.4.3.10.2 Purpose of test

To establish that registration records (other than the prime record) are deleted after timeout TD in accordance with 10.2.1 and 10.6 of MPT1343.

7.4.3.10.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 377.

The forward control channel on channel number 377 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001100001' and the value of the CCS field set to '1110101110001100'.

The radio unit shall be in the state prevailing at the end of test 70409A.

7.4.3.10.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')).

The Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 377 and to replace this by a control channel on channel number 282 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001001001' and the value of the CCS field set to '1011110100010110'.

After the General Test Assembly has received codeword 501 from the radio unit and has acknowledged this request with codeword 401 the Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 282 and to replace

this by a control channel on channel number 377 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001100001' and the value of the CCS field set to '1110101110001100'.

The Tester shall initiate a timing device at the instant that codeword 501 is received from the radio unit.

The radio unit shall remain connected to the General Test Assembly in the idle state on channel 377 and the General Test Assembly shall monitor the return control channel for any transmissions by the radio unit. No further tests shall be performed whilst the radio unit is being monitored in this way. The timing device shall be stopped upon receipt of a further codeword 501 from the radio unit and the elapsed time recorded.

7.4.3.10.5 Radio unit response

The radio unit shall transmit codeword 501 (RQR) subsequent to the change from channel number 377 to channel number 282 but shall make no transmission subsequent to the change from channel number 282 to channel number 377, except that it shall transmit codeword 501 (RQR) within 300 seconds ±30 seconds of its first transmission of codeword 501.

7.4.3.10.6 States of radio unit registration records during test

(For information only).

1	2	3	4	
C-	B-	B-	C-	Prime
A-	C-	NULL	B-	Second

1 - At commencement of test.
2 - Upon first successful registration.
3 - Upon timeout of TD.
4 - Upon registering after successful registration timeout.

7.4.3.11 Temporary marking of undefined registration records

7.4.3.11.1 Test number

70411A

7.4.3.11.2 Purpose of test

To establish that an undefined registration record is marked as temporary when REG='1' is received in accordance with 10.4.1, 10.4.2.1 and 10.7 of MPT1343.

7.4.3.11.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 377.

The forward control channel on channel number 377 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001100001' and the value of the CCS field set to '1110101110001100'.

The radio unit shall be in the state prevailing at the end of test 70410A.

7.4.3.11.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')).

The Tester shall cause the General Test Assembly to change the SYS field value radiated in all CCSCs on the forward control channel number 377 to the value '101010001000001' (with corresponding change in CCS to '1100000001101010').

The Tester shall then cause the General Test Assembly to transmit codeword 705 (BCAST) with the value of the SYS field set to '101010001000001' and the value of NA set to '10'.

After a suitable period has elapsed the Tester shall then cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101010001000001' and the value of NA set to '10'.

7.4.3.11.5 Radio unit response

The radio unit shall transmit codeword 501 (RQR) following the change in SYS field value and shall make no further transmissions until the General Test Assembly has transmitted codeword 704, when the radio unit shall again transmit codeword 501.

7.4.3.11.6 States of radio unit registration records during test

(For information only).

1	2	3	4	
C-	J-	J1	J0	Prime
B-	C-	C-	C-	Second

1 - At commencement of test.
2 - Upon first successful registration.
3 - Upon receipt of codeword 705 (temporary registration state).
4 - Upon receipt of codeword 704 (normal registration state) and after successful registration.

7.4.3.12 State of normal registration records after REG=1 (Home Zone)

7.4.3.12.1 Test number

70412A

7.4.3.12.2 Purpose of test

To establish that a normal registration record is not marked as temporary when REG='1' is received while the radiated value of the ZONE parameter matches the Home Zone of the radio unit in accordance with 10.4.1 and 10.7 of MPT1343.

7.4.3.12.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 377.

The forward control channel on channel number 377 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101010001000001' and the value of the CCS field set to '1100000001101010'.

The radio unit shall be in the state prevailing at the end of test 70411A.

7.4.3.12.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')).

The Tester shall then cause the General Test Assembly to transmit codeword 705 (BCAST) with the value of the SYS field set to '101010001000001' and the value of NA set to '10'.

After a suitable period has elapsed the Tester shall then cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101010001000001' and the value of NA set to '10'.

7.4.3.12.5 Radio unit response

The radio unit shall make no transmissions for the duration of the tests.

7.4.3.12.6 States of radio unit registration records during test

(For information only).

1	
J0	Prime
C-	Second

1 - A commencement of, and for the duration of test.

7.4.3.13 State of normal registration records after REG=1 (Home Zone)

7.4.3.13.1 Test number

70413A

7.4.3.13.2 Purpose of test

To establish that a normal registration record is marked as temporary when REG='1' is received while the radiated value of the ZONE parameter does not match the Home Zone of the radio unit in accordance with 10.4.1 and 10.7 of MPT1343. (Note that the AREA sub-field denoted 'A' has a zone value which does not match Home Zone of the radio unit).

7.4.3.13.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 377.

The forward control channel on channel number 377 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101010001000001' and the value of the CCS field set to '1100000001101010'.

The radio unit shall be in the state prevailing at the end of test 70412A.

7.4.3.13.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

The Tester shall cause the General Test Assembly to cease to radiate the control channel on channel number 377 and to replace this by a control channel on channel number 58 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCS field set to '1000110100001001'.

After the General Test Assembly has received codeword 501 from the radio unit and has acknowledged this request with codeword 401 the Tester shall cause the General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101001000100001' and the value of NA set to '10'.

After a suitable period has elapsed, the Tester shall cause the General Test Assembly to transmit codeword 705 (BCAST) with the value of the SYS field set to '101001000100001' and the value of NA set to '10'.

Finally, after a further suitable period has elapsed, the Tester shall cause the General Test Assembly again to transmit codeword 704 (BCAST) with the value of the SYS field set to '101001000100001' and the value of NA set to '10'.

7.4.3.13.5 Radio unit response

The radio unit shall transmit codeword 501 (RQR) following the change in control channel number. No transmission from the radio unit shall follow the transmission of codewords 704 and 705 (BCAST) except for the final transmission of codeword 704 to which the radio unit shall react by transmitting codeword 501 (RQR).

7.4.3.13.6 States of radio unit registration records during test

(For information only).

1	2	3	4		
J0	A-	A0	A1	A0	Prime
C-	J0	J0	J0	J0	Second

1 - At commencement of test.
2 - After successful registration following change of channel number.
3 - After receipt of first codeword 704.
4 - After receipt of codeword 705.
5 - After receipt of second codeword 704 and subsequent successful registration.

7.4.3.14 Undefined registration record marking

7.4.3.14.1 Test number

70414A

7.4.3.14.2 Purpose of test

To establish that an undefined registration record is marked as normal at some time between switch off and being made ready for a new session in accordance with 10.2.1, 10.2.2, 10.4.1 and 10.7 of MPT1343. The resultant normal registration record is verified by showing that it is not marked as temporary by means of the appropriate BCAST message received whilst in the Home Zone.

7.4.3.14.3 Initialisation

The radio unit shall utilise the A personalisation.

The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 58.

The forward control channel on channel number 58 shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001000100001' and the value of the CCS field set to '1000110100001001'.

The radio unit shall be in the state prevailing at the end of test 70413A.

7.4.3.14.4 Method

For the duration of the test any transmissions of the radio unit on the return control channel shall be monitored and the General Test Assembly shall respond to any transmissions of codeword 501 (RQR) from the radio unit with codeword 401 (ACK(QUAL='0')), in accordance with 7.2.4 and 8.2.1 of MPT1327.

The Tester shall cause the General Test Assembly to cease to radiate the control channel on channel number 58 and to replace this by a control channel on channel number 282 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101001001001001' and the value of the CCS field set to '1011110100010110'.

After the General Test Assembly has received codeword 501 from the radio unit and has acknowledged this request with codeword 401 the Tester shall then cause the General Test Assembly to cease to radiate the control channel on channel number 282 and to replace this by a control channel on channel number 377 which shall carry codeword 102 as the CCSC where prescribed in 3.3.3.1 of MPT1327 with the value of the SYS field set to '101010001000001' and the value of the CCS field set to '1100000001101010'.

After the General Test Assembly has received codeword 501 from the radio unit and has acknowledged this request with codeword 401 the Tester shall switch the radio unit off in accordance with the manufacturer's instructions.

After a short time the Tester shall switch the radio unit on in accordance with the manufacturer's instructions.

After a suitable period has elapsed (to allow for channel hunting) the Tester shall cause the General Test Assembly to transmit codeword 705 (BCAST) with the value of the SYS field set to '101010001000001' and the value of NA set to '10'.

Finally, after a further suitable period has elapsed, the Tester shall cause a General Test Assembly to transmit codeword 704 (BCAST) with the value of the SYS field set to '101010001000001' and the value of NA set to '10'.

7.4.3.14.5 Radio unit response

The radio unit shall transmit codeword 501 (RQR) subsequent to the change from channel number 58 to channel number 282 and subsequent to the change from channel number 282 to channel number 377. The radio unit shall make no transmissions subsequent upon receiving codeword 704 or codeword 705.

7.4.3.14.6 States of radio unit registration records during test

(For information only).

1	2	3	4	
A0	B-	J-	J0	Prime
J0	A0	B-	NULL	Second

1 - At commencement of test.
2 - After first successful registration.
3 - After second successful registration.
4 - After switch on to end of test.

7.5 Security Number Checking

7.5.1 Attachment, removal and alteration of the security number device

7.5.1.1 Test number

70501A

7.5.1.2 Purpose of test

To verify that removal of the device containing the security number is likely to damage the radio unit such as to render it inoperative, in accordance with Section 7 of MPT1343.

To verify that adequate provision has been made to prevent alteration of the security number, in accordance with Section 7 of MPT1343.

7.5.1.3 Method

In order to avoid destructive testing of the radio unit, compliance with the requirements of 7.5.1.4 shall be determined by manufacturers declaration or by visual inspection.

7.5.1.4 Requirements

The Tester shall be satisfied that removal of the security number device is likely to render the radio unit inoperative.

The Tester shall be satisfied that adequate provision has been made to stop alteration of the security number device.

7.5.2 Security number marking

7.5.2.1 Test number

70502A

7.5.2.2 Purpose of test

To ensure that the security number marked on the radio unit is sufficiently permanent.

7.5.2.3 Initialisation

The radio unit shall be disassembled (in accordance to the manufacturers instructions) to the point that the security number can be accessed.

7.5.2.4 Method

The Tester shall lightly rub the security number mark for 15 seconds with a cloth soaked in water.

The Tester shall lightly rub the security number mark for 15 seconds with a cloth soaked in petroleum spirit.

7.5.2.5 Requirements

The security number mark shall still be legible after the two 15 second rubbing operations and adhesive labels (if used) shall not have become loose or become curled at the edges.

7.5.3 Security number value

7.5.3.1 Test number

70503A

7.5.3.2 Purpose of test

To ensure that the marked number and manufacturer's details supplied correspond to the security number used in the security check response message.

7.5.3.3 Initialisation

The Tester shall note that the security number details marked on the radio unit and shall then reassemble the radio unit.

The radio unit shall utilise A personalisation. The tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.5.3.4 Method

The Tester shall cause the General Test Assembly to send codeword 601 on the forward control channel on channel number 282. The General Test Assembly shall monitor the return control channel for a response from the radio unit to codeword 601 in the slot immediately following.

The General Test Assembly shall retain the content of any received codeword in that slot for later inspection and analysis by the Tester.

7.5.3.5 Radio unit response

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

The analysis of bits in codeword 801 shall confirm the following relationship to the security number information advised by the manufacturer under the provisions of 3.4 and marked on the unit.

Bits 2-9 shall carry the binary equivalent of the manufacturers code (bit 9 is LSB) as marked on the unit and advised under the provisions of 3.4.

Bits 10-13 shall carry the binary equivalent of the model code (bit 13 is LSB) as marked on the unit and advised under the provisions of 3.4.

Bits 14-21 shall carry the check bits as advised under the provisions of 3.4.

Bits 31-48 shall carry the unit serial number (bit 48 is LSB) as marked on the unit and advised under the provisions of 3.4.

7.6 Call Set Up

7.6.1 Introduction

The tests in the following sections are to be applied using the A personalisation only, see section 3.1 and 3.2 of this specification.

The tests in this section are designed to test the mobile procedure for making and receiving calls, in accordance with section 9 of MPT1327 and section 8 of MPT 1343. The tests in this section cover the following:

a) Requesting a call.

b) Indication to user on ACK message.

c) Go to Channel messages.

d) Indication to user on AHY message.

The radio units tested will be in one of two categories:

Radio units of the first category (Category I) shall be those fitted with a numerical entry or selection device enabling the manual entry of numbers for the purpose of calling other parties or services available on the network.

Radio units of the second category (Category II) shall be those not fitted with any numerical entry or selection device, but which request calls to other parties using functionally specific control buttons, to select pre-programmed numbers.

The first test of this section determines the category for the radio unit, and then section 7.6.3 shall be employed for Category 1 radio units, while section 7.6.4 shall be employed for Category II radio units.

The Tester shall refer to the radio unit user's guide when observing the confidence indications given to the user. These shall be unambiguous, in accordance with section 8.1 of MPT1343.

7.6.2 Establishing category of radio unit

7.6.2.1 Test number

70601A

7.6.2.2 Purpose of test

The test is to establish the category into which the radio unit should be placed, and determine the appropriate sequence of tests to be employed.

7.6.2.3 Initialisation

No initialisation is required.

7.6.2.4 Test method

The Tester shall carefully examine the radio unit for numerical entry or selection devices. A radio unit shall be deemed to provide numeric entry if any key is marked by a simple numeric character.

Alphabetic or Alphanumeric entry or selection devices are permissible provided they cannot be confused with the standard marking scheme. (e.g.,M1, M2, CALL 1).

7.6.2.5 Limits

If the radio unit is equipped with any device for numerical entry or selection, the Tester shall employ tests 70602A to 70622A and 70634A onwards. If the radio unit is not equipped for numerical entry or selection, the Tester shall employ tests 70623A onwards.

7.6.3 Requesting a call (Category I)

7.6.3.1 RQS generation (individual Call)

7.6.3.1.1 Test number

70602A Individual, in-fleet call
70603A Individual, inter-fleet call (same prefix, small fleet)
70604A Individual, inter-fleet call (same prefix, large fleet)
70605A Individual, inter-fleet call (inter-prefix, small fleet)
70606A Individual, cross-fleet call (inter-prefix, large fleet)

7.6.3.1.2 Purpose of test

This test is designed to check the radio unit signalling and confidence indication in accordance with Sections 8.1 and 8.2 of MPT1343 and 9.2.1 of MPT1327.

7.6.3.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel number 282 which shall carry codeword 102 as the CCSC with SYS and CCS values as stated in Section 7.4.3.14.4. The radio unit shall be switched on and in the idle state on this control channel immediately prior to the test.

7.6.3.1.4 Test method

The Tester shall key in each of the following numbers:

Test No: 70602A 275#
Test No: 70603A 3250 42#
Test No: 70604A 5725 223#
Test No: 70605A 320 2850 59#
Test No: 70606A 281 3369 220#

The Tester shall analyse the radio unit signalling using the General Test Assembly and shall observe the confidence indications generated by the radio unit. No responses shall be generated by the General Test Assembly. After each number has been keyed in the radio unit shall be allowed to return to the idle state.

7.6.3.1.5 Radio unit responses

The radio unit shall generate CSUIP indication in accordance with the manufacturers instructions for use when the (#) key is pressed after a valid number. When the RQS message has been sent 8 times and the radio unit timer TW has expired the radio unit shall generate Call Fail indication and then return to the idle state.

The RQS messages generated shall be:

Test No: 70602A Codeword 503
Test No: 70603A Codeword 507 with IDENT1 = 2522
Test No: 70604A Codeword 507 with IDENT1 = 7473
Test No: 70605A Codeword 507 with IDENT1 = 8189
Test No: 70606A Codeword 507 with IDENT1 = 8189

7.6.3.2 RQS generation (group call)

7.6.3.2.1 Test number

70607A

This test shall be carried out only if the radio unit is declared by the manufacturer to be capable of initialising group calls (see Section 3).

7.6.3.2.2 Purpose of test

This test is designed to check the radio unit signalling and confidence indications, in accordance with Sections 8.1 and 8.2 of MPT1343 and 9.2.1 of MPT1327.

7.6.3.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.6.3.2.4 Test method

The Tester shall key in the following number:

95#

The Tester shall analyse the radio unit signalling using the General Test Assembly and shall observe the confidence indicators generated by the radio unit.

These tests check that invalid individual number entries are rejected by the radio unit.

7.6.3.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.3.3.4 Test method

The Tester shall key in the following numbers:

Test No: 70608A 35#
Test No: 70609A 455#

The Tester shall analyse the radio unit signalling using the General Test Assembly and shall observe the confidence indications generated by the radio unit.

7.6.3.3.5 Radio unit response

After each number is entered the radio unit shall generate NU indication when the (#) key is pressed. No transmission by the radio unit shall be recorded by the General Test Assembly.

7.6.3.4 Invalid number entry (group calls)

7.6.3.4.1 Test numbers

70610A Wrong number of digits

70611A Inter-fleet call when barred (two digit group)

70612A Inter-fleet call when barred (three digit group)

70613A Inter-prefix call when barred (two digit group)

70614A Inter-prefix call when barred (three digit group)

7.6.3.4.2 Purpose of test

These tests are designed to check that a radio unit will respond correctly when invalid group numbers are entered.

7.6.3.4.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.3.4.4 Test method

The Tester shall key in the following numbers:

Test No:	70610A	902#
Test No:	70611A	2815 92#
Test No:	70612A	4195 910#
Test No:	70613A	227 5880 93#
Test No:	70614A	238 5360 909#

The tester shall analyse the radio unit signalling using the General Test Assembly, and shall observe the confidence indications generated by the radio unit. After each number has been keyed in the radio unit shall be allowed to return to the idle state.

7.6.3.4.5 Radio unit response

After each number is entered the radio unit shall generate N.U indication when the (#) key is pressed. No transmission by the radio unit shall be recorded by the General Test Assembly.

7.6.3.5 Non-prescribed data calls

7.6.3.5.1 Test number

70615A

This test shall be carried out only if the radio unit is declared by the manufacturer to be capable of initiating non-prescribed data calls (see Section 3).

7.6.3.5.2 Purpose of test

This test is designed to check the correct operation of the radio unit when a non-prescribed data call is requested, in accordance with 5.5.3.1.1 of MPT1327.

7.6.3.5.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.3.5.4 Test method

The Tester shall key in the following number:

* 31 * 275#

The Tester shall analyse the radio unit signalling using the General Test Assembly, and shall observe the confidence indication generated by the radio unit.

7.6.3.5.5 Radio unit response

The radio unit shall generate CSUIP indication when the (#) key is pressed. After the RQS message has been sent 8 times the radio unit shall generate Call Fail indication and then return to the idle state. The RQS message sent shall be Codeword 511 with the value of IDENT1 = 2079.

7.6.3.6 Priority calls

7.6.3.6.1 Test number

70616A

This test shall only be carried out if the radio unit is declared by the manufacturer to be capable of initiating priority calls (see Section 3).

7.6.3.6.2 Purpose of test

This test is designed to check that a suitably equipped radio unit is able to select priority for calls, in accordance with 5.5.3.1.1 of MPT1327.

7.6.3.6.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.3.6.4 Test method

The Tester shall key in the following message:

* 8 *275#

The Tester shall analyse the radio unit signalling using the General Test Assembly, and shall observe the confidence indication generated by the radio unit.

7.6.3.6.5 Radio unit response

The radio unit shall generate CSUIP indication when the (#) key is pressed. After the RQS message has been sent 8 times and the radio unit timer TW has expired the radio unit shall generate Call Fail indication and then return to the idle state. The RQS message sent shall be codeword 513 with the value of IDENT1 set to 2079.

7.6.3.7 PABX calls

7.6.3.7.1 Test number

70617A	Call to single PABX operator
70618A	Call selected PABX operator
70619A	Call to single PABX extension
70620A	Selected PABX extension (single address codeword call)
70621A	Call to PABXI gateway (extended addressing)
70622A	Call to PABXI gateway (extended addressing)

This test sequence shall only be carried out if the radio unit is declared by the manufacturer to be capable of initiating PABX calls (see Section 3).

7.6.3.7.2 Purpose of test

This test sequence is designed to check that a radio unit generates the correct signalling for PABX calls, in accordance with Sections 8.2.5 of MPT1343 and 9.2.1 of MPT1327.

7.6.3.7.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to this test.

7.6.3.7.4 Test method

The Tester shall key in the following numbers:

Test No:	70617A	0#
Test No:	70618A	05#
Test No:	70619A	2815#
Test No:	70620A	43369#
Test No:	70621A	83369#
Test No:	70622A	788144621#

The Tester shall analyse the radio unit signalling using the General Test Assembly, and shall observe the confidence indications generated by the radio unit. After each number has been keyed in the radio unit shall be allowed to return to the idle state.

7.6.3.7.5 Radio unit response

The radio unit shall generate CSUIP indication when the (#) key is pressed. After the RQS message has been sent 8 times and the radio unit timer TW has expired the radio unit shall

generate Call Fail indication and then return to the idle state. The RQS message sent shall be:

Test No:	70617A Codeword 508 with IDENT1 =	8000
Test No:	70618A Codeword 512 with IDENT1 =	8000, EXT='1', FLAG1='1', FLAG2='0'
Test No:	70619A Codeword 508 with IDENT1 =	1815
Test No:	70620A Codeword 512 with IDENT1 =	2369, EXT='1', FLAG1='0', FLAG2='1'
Test No:	70621A Codeword 512 with IDENT1 =	PABXI (8102), EXT='0', FLAG1='0', FLAG2='0'
Test No:	70622A Codeword 512 with IDENT1 =	PABXI, EXT='0', FLAG1='0', FLAG2='0'

7.6.4 Requesting a call (Category II)

The Tester shall program the addresses shown in this section into the radio unit, in accordance with the manufacturers instuctions for use, (see Section 3) so that each address can be requested by the functionally specific control buttons. If there are more addresses than programmable buttons then the radio unit will have to be programmed more than once.

If bits EXT, FLAG1, FLAG2 and DT are not specified they shall be programmed, or default to '0'. If LEVEL is not specified it shall be programmed, or default to '1'.

7.6.4.1 RQS generation (Individual Call)

7.6.4.1.1 Test number

70623A	Individual call
70624A	Inter-prefix call

7.6.4.1.2 Purpose of test

This test is designed to check the radio unit signalling and confidence indication in accordance with Sections 8.1 and 8.2 of MPT1343 and 9.2.1 of MPT1327.

7.6.4.1.3 Initialisation

The radio unit utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.4.1.4 Test method

The Tester shall program the two following addresses:

Test No: 70623A 39 2079
Test No: 70624A 120 1739

The Tester shall request each address in turn by use of the functionally specific control buttons.

The Tester shall analyse the radio unit signalling using the General Test Assembly and shall observe the confidence indications generated by the radio unit. After each address has been requested by the radio unit shall be allowed to return to the idle state.

7.6.4.1.5 Radio unit responses

The radio unit shall generate CSUIP indication in accordance with the manufacturers instructions for use when the functionally specific control button is pressed. When the RQS message has been sent 8 times and the radio unit timer TW has expired the Radio unit shall generate Call Fail indication and then return to the idle state.

The test RQS messages generated shall be:

Test No: 70623A Codeword 503
Test No: 70624A Codeword 507 with IDENT1 = 8189

7.6.4.2 RQS generation (Group Call)

7.6.4.2.1 Test number

70625A

This test shall be carried out only if the radio unit is declared by the manufacturer to be capable of initiating group calls (see Section 3).

7.6.4.2.2 Purpose of test

This test is designed to check the radio unit signalling and confidence indications, in accordance with Sections 8.1 of MPT1343 and 9.2.1 of MPT1327.

7.6.4.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.6.4.2.4 Test method

The Tester shall program the following address:

39 605

The Tester shall request the address by use of the functionally specific control buttons. The Tester shall analyse the radio unit signalling using the General Test Assembly and shall observe the confidence indications generated by the radio unit.

7.6.4.2.5 Radio unit response

The radio unit shall generate CSUIP indication in accordance with the manufacturers instruction for use when the functionally specific control button is pressed. When the RQS message has been sent 8 times and the radio unit timer TW has expired the radio unit shall generate Call Fail indication and then return to the idle state.

The RQS message generated shall be Codeword 507 with the value of IDENT1 set to 605.

7.6.4.3 Non-prescribed data calls

7.6.4.3.1 Test number

70626A

This test shall be carried out only if the radio unit is declared by the manufacturer to be capable of initiating non-prescribed data calls (see Section 3).

7.6.4.3.2 Purpose of test

This test is designed to check the correct operation of the suitably equipped radio unit when a non-prescribed data call is requested, in accordance with 5.5.3.1.1 of MPT1327.

7.6.4.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.4.3.4 Test method

The Tester shall program the following address:

39 2079 with DT = '1'

The Tester shall request the number by use of the functionally specific control buttons. The Tester shall analyse the radio unit signalling using the General Test Assembly, and shall observe the confidence indications generated by the radio unit.

7.6.4.3.5 Radio unit response

The radio unit shall generate CSUIP indication when the functionally specific control button is pressed. After the RQS message has been sent 8 times the radio unit shall generate Call Fail indication and then return to the idle state. The RQS message sent shall be codeword 511 with the value of IDENT1 set to 2079.

7.6.4.4 Priority calls

7.6.4.4.1 Test number

70627A

This test shall only be carried out if the radio unit is declared by the manufacturer to be capable of initiating priority calls (see Section 3).

7.6.4.4.2 Purpose of test

This test is designed to check that a suitably equipped radio unit is able to select priority for calls, in accordance with 5.5.3.1.1 of MPT1327.

7.6.4.4.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.4.4.4 Test method

The Tester shall program in the following address:

39 2079 with LEVEL = '0'

The Tester shall request the address by use of the functionally specific control buttons. The Tester shall analyse the radio unit signalling using the General Test Assembly, and shall observe the confidence indication generated by the radio unit.

7.6.4.4.5 Radio unit response

The radio unit shall generate CSUIP indication when the functionally specific control buton is pressed. After the RQS message has been sent 8 times and the radio unit timer TW has expired the radio unit shall generate Call Fail indication and then return to the idle state. The RQS message sent shall be codeword 513 with the value of IDENT1 set to 2079.

7.6.4.5 PABX calls

7.6.4.5.1 Test number

70628A	Call to single PABX operator
70629A	Call to selected PABX operator
70630A	Call to single PABX extension
70631A	Call to selected PABX extension (short addressing)
70632A	Call to PABXI gateway (extended addressing)
70633A	Call to PABXI gateway (extended addressing)

This test sequence shall only be carried out if the radio unit is declared by the manufacturer to be capable of initiating PABX calls (see Section 3).

7.6.4.5.2 Purpose of test

This test sequence is designed to check that a radio unit generates the correct signalling for PABX calls, in accordance with Sections 8.2.5 of MPT1343 and 9.2.1 of MPT1327.

7.6.4.5.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to this test.

7.6.4.5.4 Test method

The Tester shall program (or default values shall be assumed, see Section 7.6.4) the following addresses, EXT and FLAG bits.

		IDEN	TEXT	FLAG 1	FLAG 2
Test No:	70628A	8000	'1'	'0'	'0'
Test No:	70629A	8000	'1'	'1'	'0'
Test No:	70630A	1815	'1'	'0'	'0'
Test No:	70631A	2369	'1'	'0'	'1'
Test No:	70632A	PABX 83369			
Test No:	70633A	PABX 78814 4621			

The Tester shall analyse the radio unit signalling using the General Test Assembly, and shall observe the confidence indications generated by the radio unit. After each number has been keyed in the radio unit shall be allowed to return to the idle state.

7.6.4.5.5 Radio unit response

The radio unit shall generate CSUIP indication when the functionally specific control button is pressed. After the RQS message has been sent 8 times and the radio unit timer TW has expired the radio unit shall generate Call Fail indication and then return to the idle state. The RQS message sent shall be:

Test No: 70628A Codeword 508 with IDENT1 = 8000

Test No: 70629A Codeword 512 with IDENT1 = 8000, EXT='1', FLAG1='1', FLAG2='0'

Test No: 70630A Codeword 508 with IDENT1 = 1815

Test No: 70631A Codeword 512 with IDENT1 = 2369, EXT='1', FLAG1='0', FLAG2='1'

Test No: 70632A Codeword 512 with IDENT1 = PABXI (8102), EXT='0', FLAG1 '0', FLAG2='0'

Test No: 70633A Codeword 512 with IDENT1 = PABXI, EXT='0', FLAG1='0', FLAG2='0'

7.6.5 Call request acknowledgement

7.6.5.1 ACKI(QUAL='1')

7.6.5.1.1 Test number

70634A

7.6.5.1.2 Purpose of test

This test is designed to check that the radio unit obeys the TW timeout, and generates the correct confidence indications in accordance with Section 8.1.3.2. of MPT1343.

7.6.5.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.5.1.4 Test method

The tester shall cause the radio unit to generate codeword 503. The General Test Assembly shall be set to respond to codeword 503 with codeword 409 in the next slot. The Tester shall observe the confidence indication generated by the radio unit.

7.6.5.1.5 Radio unit response

The radio unit shall generate CSUIP indications when the call is initiated. The radio unit cease CSUIP and generate Call Fail indication 60 seconds ±6 seconds after the call is initiated.

7.6.5.2 Resetting timeout TW

7.6.5.2.1 Test number

70635A

7.6.5.2.2 Purpose of test

This test is designated to check that the radio unit will reset the appropriate timeout on receipt of an AHY message.

7.6.5.2.3 Initialisation

The radio unit shall utilise the A personalisation. The tester shall connect the radio unit of the General Test Assembly which shall be radiating a single control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.5.2.4 Test method

The Tester shall cause the radio unit to generate codeword 503. The General Test Assembly shall be set to respond to codeword 503 with codeword 409 in the next slot. 30 seconds ±3 seconds after sending codeword 409 the General Test Assembly shall send codeword 610. The Tester shall analyse the radio unit signalling with the General Test Assembly and shall observe the confidence indications generated by the radio unit.

7.6.5.2.5 Radio unit response

The radio unit shall generate CSUIP indication when the call is initiated. The radio unit shall respond to codeword 610 with codeword 418. The radio unit shall cease CSUIP and generate Call Fail indications 60 seconds ±6 seconds after the General Test Assembly has sent codeword 610.

7.6.5.3 Inter-prefix call request

7.6.5.3.1 Test number

70636A

7.6.5.3.2 Purpose of test

This test is designed to check that the radio unit operates correctly when making an interprefix call.

7.6.5.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.5.3.4 Test method

The Tester shall cause the radio unit to generate a call to radio unit address 120 1739 (either by appropriate programming of a Category II mobile or by entering 320 2850 239 # on a Category I mobile). The General Test Assembly shall be set to respond to the request with codeword 611 in the slot immediately following the request.

The Tester shall analyse the radio unit signalling using the General Test Assembly and shall observe the confidence indications generated by the radio unit.

7.6.5.3.5 Radio unit response

The radio unit shall generate CSUIP indication when the call is initiated. The radio unit shall send codeword 803 in the slot immediately following codeword 611. 60 seconds ±6 seconds after the transmission of the call request the radio unit shall cease CSUIP and generate Call Fail indication.

7.6.5.4 Rejection of call request

7.6.5.4.1 Test number

70637A	Radio unit indication on receipt of ACKX(QUAL='0')
70638A	Radio unit indication on receipt of ACKX(QUAL='1')
70639A	Radio unit indication on receipt of ACKV(QUAL='0')
70640A	Radio unit indication on receipt of ACKV(QUAL='1')

7.6.5.4.2 Purpose of test

This test is designed to check that the radio unit generates the appropriate confidence indications in accordance with Section 8.1 of MPT1343 to acknowledgement messages which terminate the call signalling.

7.6.5.4.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single control channel to channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.5.4.4 Test method

The Tester shall cause the radio unit to generate codeword 503 either by dialling 275 # (Category I mobile) or use of a functionally specific control button (Category II mobile) programmed to call address 39 2079.

The General Test Assembly shall be set to respond to codeword 503 with the following acknowledgements:

Test No: 70637A	codeword 406	ACKX(QUAL='0')
Test No: 70638A	codeword 405	ACKX(QUAL='1')
Test No: 70639A	codeword 413	ACKV with QUAL = '0'
Test No: 70640A	codeword 413	ACKV with QUAL = '1'

The Tester shall observe the confidence indications generated by the radio unit.

7.6.5.4.5 Radio unit response

The radio unit shall generate the following indications in the named tests:

Test No:	70637A	N.U. Indication		
Test No:	70638A	Call Fail	-	Called Party Busy (or system busy, if this option is implemented)
Test No:	70639A	Call Fail	-	Unavailable
Test No:	70640A	Call Fail	-	Called Party Busy

7.6.6 Assignment of radio unit to traffic channel

7.6.6.1 Called party channel changing and audio mute check

7.6.6.1.1 Test numbers

70641A Individual Call (speech)
70642A Individual Call (data)
70643A Group Call (speech)
70644A Group Call (data)

7.6.6.1.2 Purpose of test

This test sequence is designed to check the channel switching behaviour of the radio unit on receipt of a Go-To-Channel message when acting as a called party, and control of the audio mute for non-prescribed data calls.

7.6.6.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.6.1.4 Test method

The Tester shall cause the General Test Assembly to generate the following codewords for the named tests:

Test No: 70641A Codeword 201
Test No: 70642A Codeword 202
Test No: 70643A Codeword 208 with D = '0'
Test No: 70644A Codeword 208 with D = '1'

In each codeword the value of CHAN is set to '0010110110'.

At the appropriate time the Tester shall cause the General Test Assembly to radiate a traffic channel on channel number 239 such that the first transmission on the forward traffic channel is codeword 601, with the first bit of the preamble preceding codeword 601 beginning at least 35ms after the last bit of the GTC codeword.

Following codeword 601 the forward traffic channel shall be modulated with a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation.

Approximately 10 seconds after codeword 601 is sent the Tester shall cause the General Test Assembly to radiate codeword 702, with the value of CHAN set to '0010110110' and the value of CONT set to '0011100001'.

7.6.6.1.5 Radio unit response

On receipt of the GTC codeword the radio unit shall generate GTC indication in accordance with the manufacturer's instructions. The radio unit shall respond to codeword 601 with codeword 801. In tests 70641A and 70643A the Tester shall, in addition, hear the test tone from the radio unit. In tests 70642A and 70644A the radio unit audio shall remain muted.

In all four tests, the radio unit shall return to the idle state on control channel number 282 in response to codeword 702 on channel number 239.

7.6.6.2 Calling party channel changing and audio mute check (individual call).

Test 70646A shall not be performed if the radio unit manufacturer has declared that the radio unit does not provide for the standard option to originate data calls (MPT 1343 section 11.5.5.3.1.1).

7.6.6.2.1 Test numbers

70645A Speech call
70646A Data call

7.6.6.2.2 Purpose of test

This test sequence is designed to check the channel switching behaviour of the radio unit on receipt of a Go-To-Channel message when acting as a calling party, making an individual call, and control of the audio mute for non-prescribed data calls.

7.6.6.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.6.2.4 Test method

The Tester shall cause the radio unit to generate the following codewords in the named tests:

Test No: 70645A Codeword 503
Test No: 70646A Codeword 511 with IDENT1 = 2079

The General Test Assembly shall acknowledge the RQS codeword with codeword 409 in the next slot. After approximately 15 seconds the Tester shall cause the General Test Assembly to generate codeword 408.

After a further 15 seconds (approximately), the Tester shall cause the General Test Assembly to generate the following codewords in the named tests:

Test No: 70645A Codeword 209 with D = '0'
Test No: 70646A Codeword 209 with D = '1'

In each codeword the value of CHAN is set to '0010110110'.

At the appropriate time the Tester shall cause the General Test Assembly to radiate on traffic channel number 239 such that the first transmission of the forward channel is codeword 601, with the first bit of the preamble preceeding codeword 601 beginning at least 35ms after the last bit of the GTC codeword.

Following codeword 601 the forward traffic channel shall be monitored with a 400 Hz tone set at a level giving a peak deviation of 60% of maximum permitted frequency deviation.

Approximately 10 seconds after codeword 601 is sent the Tester shall cause the General Test Assembly to radiate codeword 702 with the value of CHAN set to '0010110110' and the value of CONT set to '0011100001'.

7.6.6.2.5 Radio unit response

When the call is initiated the radio unit shall generate CSUIP. If the radio is declared by the manufacturer to be equipped with Called Party Ringing it shall generate the appropriate indication (as detailed in the manufacturer's information) when codeword 408 is sent by the General Test Assembly. Otherwise the radio unit shall continue to indicate CSUIP.

When the GTC is sent the radio unit shall cease CSUIP or called party ringing indicator as appropriate and optionally may generate a GTC confidence indication. The radio unit shall respond to codeword 601 with codeword 801. In test 70645A the Tester shall, in addition, hear the test tone from the radio unit. In test 70646A the radio unit audio shall remain muted.

In both tests, the radio unit shall return to the idle state on control channel number 282 in response to codeword 702 on channel number 239.

7.6.6.3 Calling party channel changing and audio mute check (group call)

Neither test 70647A nor test 70648A shall be performed if the radio unit manufacturer has declared that the radio unit does not provide for the standard option to originate calls to group addresses (MPT 1343 section 11.9). Test 70648A shall not be performed if the radio unit does not provide for the standard option to originate data calls (MPT 1343 section 11.5.5.3.1.1).

7.6.6.3.1 Test numbers

70647A Speech call
70648A Data call

7.6.6.3.2 Purpose of test

This test is designed to check the channel switching behaviour of the radio unit on receipt of a Go-To-Channel message when acting as a calling party making a group call and control of the audio mute for non-prescribed data calls.

7.6.6.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.6.3.4 Test method

The Tester shall cause the radio unit to generate the following codewords in the named tests:

Test No: 70647A Codeword 511 with IDENT1 = 605, DT = '0'
Test No: 70648A Codeword 511 with IDENT1 = 605, DT = '1'

The General Test Assembly shall acknowledge the RQS with the following codewords in the named tests:

Test No: 70647A Codeword 210 with D = '0'
Test No: 70648A Codeword 210 with D = '1'

In each codeword the value of CHAN is set to '0010110110'.

At some appropriate time the Tester shall cause the General Test Assembly to radiate a traffic channel on channel number 239 such that the first transmission on the forward traffic channel is codeword 601, with the first bit of the preamble preceding codeword 601 beginning at least 35ms after the last bit of the GTC codeword.

Following codeword 601 the forward traffic channel shall be modulated with a 400 Hz tone at a level giving a peak deviation of 60% of maximum permitted frequency deviation.

Approximately 10 seconds after codeword 601 is sent the Tester shall cause the General Test Assembly to radiate codeword 702 with the value of CHAN set to '0010110110' and the value of CONT set to '0011100001'.

7.6.6.3.5 Radio unit response

When the GTC codeword is sent the radio unit shall generate GTC indication.

The radio unit shall respond to codeword 601 with codeword 801. In test 70647A the Tester shall, in addition, hear the test tone from the radio unit. In test 70648A the radio unit audio shall remain muted.

In both tests, the radio unit shall return to the idle state on control channel number 282 in response to codeword 702 on channel number 239.

7.6.7 AHY messages

7.6.7.1 Response to AHY (CHECK = '0')

7.6.7.1.1 Test number

70649A

7.6.7.1.2 Purpose of test

This test is designed to check that the radio unit responds correctly to an availability check AHY in accordance with Section 9.2.2.2 of MPT1327.

7.6.7.1.3 Initialisation

The radio unit utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on

7.6.7.2.1 Test number

70650A

7.6.7.2.2 Purpose of test

This test is designed to check that the radio unit responds correctly to the availability check, AHY (CHECK='1') in accordance with Section 9.2.2.2 of MPT1327. Also to test that Alert Indication is generated in accordance with Section 8.1.3.9 of MPT1343, when the appropriate check is carried out.

7.6.7.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.7.2.4 Test method

The Tester shall cause the General Test Assembly to generate codeword 609.

Within 10 seconds of sending codeword 609 the Tester shall cause the General Test Assembly to generate codeword 208 with D = '0' and the value of CHAN set to '0010110110'.

At the appropriate time the Tester shall cause the General Test Assembly to radiate a traffic channel on channel number 239 with the first bit of the preamble preceding codeword 601 begininng at least 35ms after the last bit of the GTC codeword.

Within 20 seconds of codeword 208 the Tester shall cause the General Test Assembly to generate on control channel number 282 codeword 201, with the value of CHAN set to '0010110110'.

Between 35ms and five seconds after sending codeword 201 the Tester shall repeat the security check (codeword 601) on traffic channel number 239.

Approximately 10 seconds after the second codeword 601 is sent the Tester shall cause the General Test Assembly to radiate codeword 702 with the value CHAN set to '0010110110' and the value of CONT set to '0011100001'.

7.6.7.2.5 Radio unit response

The radio unit shall respond to codeword 609 with codeword 415 (ACKI(QUAL='0')) and shall generate the Alert indication in accordance with Section 8.1.3.9 of MPT1343.

The radio unit shall continue the Alert indication on receipt of codeword 208 and shall not respond to the first codeword 601.

The first unit shall cease Alert Indication on receipt of codeword 201, and optionally may generate GTC Indication. The radio unit shall respond to the second codeword 601 with codeword 801.

7.6.7.3 Reset of Alert state timeout, TA

7.6.7.3.1 Test number

70651A

7.6.7.3.2 Purpose of test

This test is designed to check that the Alert timeout on a radio is reset by the appropriate AHY message, in accordance with Section 9.2.2.2 of MPT1327.

7.6.7.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.7.3.4 Test method

The Tester shall cause the General Test Assembly to generate codeword 609. 30 seconds after generating codeword 609 the tester shall again cause the General Test Assembly to generate codeword 609.

The radio unit shall be allowed to time out and return to the idle state.

7.6.7.3.5 Radio unit response

The radio shall respond to codeword 609 with codeword 415 (ACKI(QUAL='0'), and shall generate the Alert indication.

When the radio unit receives the second 609 codeword, the radio unit shall continue with the Alert indication, and shall again respond with codeword 415.

60 seconds ±6 seconds after the second codeword 609 was sent, the radio unit shall cease the Alert indication and return to the idle state.

7.6.8 On-hook/Off-hook signalling

7.6.8.1 Incoming call acceptance

7.6.8.1.1 Test number

70652A

7.6.8.1.2 Purpose of test

This test is designed to check that a radio unit can correctly accept incoming calls from networks which send the AHY (CHECK='1') message, and give the appropriate confidence indications.

7.6.8.1.3 Initialisation

The radio unit utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.8.1.4 Test method

The Tester shall cause the General Test Assembly to generate codeword 609.

Within 30 seconds from codeword 609, the Tester shall accept the call using the radio unit RFCC, as detailed in the radio unit user guide. The General Test Assembly shall examine the messages generated by the radio unit, and shall respond to the 8th RQQ message (codeword 506) from the radio unit with codeword 411 (ACK(QUAL='0') with IDENT1 = TSCI).

The Tester shall then cause the General Test Assembly to generate codeword 201 with the value of CHAN set to '0010110110'.

At some time the Tester shall cause the General Test Assembly to radiate a traffic channel on channel number 239 such that the first transmission on the forward traffic channel is codeword 601, with the first bit of the preamble preceeding codeword 601 beginning at least 35ms after the last bit of the GTC codeword.

Approximately 10 seconds after codeword 601 is sent the Tester shall cause the General Test Assembly to radiate codeword 702 with the value of CHAN set to '0010110110' and the value of CONT set to '0011100001'.

7.6.8.1.5 Radio unit response

The radio unit shall respond to codeword 609 with codeword 415 in the next slot and shall initiate Alert indication.

When the Tester accepts the incoming call, the radio unit shall cease Alert indication, and generate CSUIP (called) in accordance with the manufacturer's user information. The radio unit shall also transmit the random access codeword 506 (RQQ) with STATUS = '00000' eight times on the return control channel on channel number 282. When codeword 411 is received the radio unit shall continue to indicate CSUIP.

On receipt of codeword 201 the radio unit shall cease CSUIP. When the radio unit receives codeword 601 it shall respond with codeword 801.

The radio unit shall return to the idle state on control channel number 282 in response to codeword 702 on channel number 239.

7.6.8.2 Call accept signalling rejected by network

7.6.8.2.1 Test number

70653A

7.6.8.2.2 Purpose of test

This test is designed to check that the radio unit responds correctly in accordance with 13.1.2.7 of MPT1327, when the call accept signalling is rejected by the network.

7.6.8.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.8.2.4 Test method

The Tester shall cause the General Test Assembly to generate codeword 609. Within 30 seconds from codeword 609, the Tester shall accept the call using the radio unit RFCC. On receipt of codeword 506 (RQQ) the General Test Assembly shall respond with codeword 613 (AHYX).

7.6.8.2.5 Radio unit response

The radio unit shall respond to codeword 609 with codeword 415 in the next slot and shall initiate the Alert indication.

When the Tester accepts the incoming call the radio unit shall cease the Alert indication, and generate CSUIP (called). The radio unit shall also transmit the random access codeword 506 (RQQ) with STATUS = '00000'.

When codeword 613 is received the radio unit shall cease CSUIP and generate generate Call Fail-Unavailable indication. The radio unit shall also transmit codeword 416 with QUAL='1'.

7.6.8.3 Alert state timeout reset after call accept

7.6.8.3.1 Test number

70654A

7.6.8.3.2 Purpose of test

This test is designed to check that the Alert state timeout on a radio unit is reset by the appropriate AHY messages in accordance with 9.2.2.2 of MPT1327.

7.6.8.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282. The radio unit shall be in the idle state on this control channel immediately prior to the test.

7.6.8.3.4 Test method

The Tester shall cause the General Test Assembly to generate codeword 609. Within 30 seconds of transmission of codeword 609, the Tester shall accept the call using the radio unit RFCC. On receipt of the RQQ message (codeword 506) the General Test Assembly shall respond with codeword 411.

Approximately 45 seconds after sending codeword 609 the Tester shall cause the General Test Assembly to generate codeword 612.

Between 75 and 95 seconds after sending codeword 609 the Tester shall cause the General Test Assembly to generate codeword 201 with the value of CHAN set to '0010110110.

At the appropriate time the Tester shall cause the General Test Assembly to radiate a traffic channel on channel number 239 and that the first transmission on the forward traffic channel is codeword 601, with the first bit of the preamble preceding codeword 601 beginning not more than 35ms after the last bit of the GTC codeword.

Approximately 10 seconds after codeword 601 is sent the Tester shall cause the General Test Assembly to radiate codeword 702 with the value of CHAN set to '0010110110' and the value of CONT set to '0011100001'.

7.6.8.3.5 Radio unit response

The radio unit shall respond to codeword 609 with codeword 415 in the next slot and shall initiate Alert indication.

When the Tester accepts the incoming call, the radio unit shall cease Alert indication, and generate CSUIP indication. The radio unit shall also transmit the random access codeword 506 (RQQ) with STATUS = '00000'.

When codeword 612 is received the radio unit shall respond with codeword 416 with QUAL = '0' and continue to indicate CSUIP.

When codeword 201 is received, the radio unit shall cease CSUIP. The radio unit shall respond to codeword 601 with codeword 801 on the traffic channel.

The radio unit shall return to the idle state on control channel number 282 in response to codeword 702 on channel number 239.

7.7 Traffic Channel Procedures

7.7.1 General

The tests in this section are designed to check the correct operation of the radio unit once it has been assigned to a traffic channel. The necessary radio unit behaviour is described in Section 9 of MPT1327. The tests in this section cover the following:

a) Generation of call maintenance messages.

b) Operation of timeouts during traffic channel activity.

c) Disabling user transmission.

d) Procedures for clear down and return to a control channel.

The General Test Assembly is required for these series of tests to generate one simulated control channel and one simulated traffic channel, each on a different fixed frequency.

The tests cover operation of the radio unit with both the A personalisation and the B personalisation. Sections 7.7.2 to 7.7.6 require the radio unit to utilise the A personalisation and section 7.7.7 repeats some of these tests with the radio unit utilising the B personalisation. Corresponding tests in 7.7.2 to 7.7.6 and 7.7.7 are allocated the same test number with the corresponding letter suffix A or B (e.g., 70707A and 70707B).

7.7.2 Call maintenance

The following series of tests checks that the radio unit generates the correct call maintenance messages whilst on a traffic channel and that the generation of these messages conforms to the appropriate call maintenance parameters.

7.7.2.1 Default call maintenance behaviour

7.7.2.1.1 Test number

70701A

7.7.2.1.2 Purpose of test

To ensure that, when the radio unit has not received a BCAST (SYSDEF='00010') message since the start of the session, it sends call maintenance messages whilst transmitting on a traffic channel conforming to the default procedures specified in Section 9.2.2.6 of MPT1327.

7.7.2.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.2.1.4 Test method

The Tester shall switch off the radio unit in accordance with the manufacturer's instructions. After a short time the Tester shall switch on the radio unit in accordance with the manufacturer's instructions.

After a suitable period has elapsed (for channel hunting) the Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 15 and 20 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any messages received from the radio unit during the performance of the test and time the periods between received messages.

The Tester shall return the radio unit to the idle state on the control channel by signalling "call end request" with the RFCC in accordance with the manufacturer's instructions.

7.7.2.1.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 201 (GTC). When the PTT is operated the radio unit shall transmit on the traffic channel and messages shall be sent by the radio unit

in the format specified in Section 3.3.1 of MPT1327 (as appropriate to a traffic channel) as follows:

If the radio unit manufacturer declares that the unit implements the option to send multiple messages then two codeword 706 (MAINT (OPER='000')) shall be sent by the radio unit at the start of the transmission on the traffic channel. Otherwise the radio unit shall send one codeword 706.

A minimum of two codewords 707 (MAINT(OPER='010')) shall be sent by the radio unit during the transmission on the traffic channel.

If the radio unit manufacturer declares that the unit implements the option to send multiple messages then three codeword 708 (MAINT(OPER='001')) shall be sent by the radio unit at the end of the transmission on the traffic channel. Otherwise the radio unit shall send one codeword 708.

The time period between any two adjacent received codewords shall not exceed 5.5 seconds.

7.7.2.2 Change of call maintenance parameters (disable periodic messages)

7.7.2.2.1 Test number

70702A

7.7.2.2.2 Purpose of test

To ensure that, when the radio unit has received a BCAST (SYSDEF='00010') message since the start of the session, it sends call maintenance messages whilst transmitting on a traffic channel conforming to the parameters specified in the last received BCAST (SYSDEF='00010') message in accordance with Sections 5.5.4.5 and 9.2.2.8 of MPT1327.

7.7.2.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.2.2.4 Test method

The Tester shall cause the General Test Assembly to transmit codeword 709 (BCAST) within the forward message stream on channel number 282.

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall

operate the PTT control on the radio unit, keeping the PTT operated for a period of between 15 and 20 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any messages received from the radio unit during the performance of the test.

The Tester shall return the radio unit to the idle state on the control channel by signalling "call end request" with the RFCC in accordance with the manufacturer's instructions.

7.7.2.2.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturers information supplied, upon receipt of codeword 201 (GTC). When the PTT is operated the radio unit shall transmit on the traffic channel and messages shall be sent by the radio unit in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel) as follows:

If the radio unit manufacturer declares that the unit implements the option to send multiple messages then two codeword 706 (MAINT (OPER='000')) shall be sent by the radio unit at the start of the transmission on the traffic channel. Otherwise the radio unit shall send one codeword 706.

If the radio unit manufacturer declares that the unit implements the option to send multiple messages then three codeword 708 (MAINT(OPER='001')) shall be sent by the radio unit at the end of the transmission on the traffic channel. Otherwise the radio unit shall send one codeword 708.

No codewords 707 shall be sent by the radio unit at any time during the transmission.

7.7.2.3 Change of call maintenance parameters (disable pressel on and change maximum period)

7.7.2.3.1 Test number

70703A

7.7.2.3.2 Purpose of test

To ensure that, when the radio unit has received a BCAST (SYSDEF='00010') message since the start of the session, it sends call maintenance messages whilst transmitting on a traffic channel conforming to the parameters specified in the last received BCAST(SYSDEF='00010') message in accordance with Sections 5.5.4.5 and 9.2.2.6 of MPT1327.

7.7.2.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.2.3.4 Test method

The Tester shall cause the General Test Assembly to transmit codeword 710 (BCAST) within the forward message stream on channel number 282.

The Tester shall then use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any messages received from the radio unit during the performance of the test and time the periods between received messages.

The Tester shall turn the radio unit off, (to reset call maintenance parameters to the default condition).

7.7.2.3.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturers information supplied, upon receipt of codeword 201 (GTC). When the PTT is operated the radio unit shall transmit on the traffic channel and messages shall be sent by the radio unit in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel) as follows:

Codeword 706 shall not be sent by the radio unit at the start of the transmission on the traffic channel, or at any other time during the transmission.

A minimum of two codewords 707 shall be sent by the radio unit during the transmission on the traffic channel.

If the radio unit manufacturer declares that the unit implements the option to send multiple messages then three codeword 708 (MAINT(OPER='001')) shall be sent by the radio unit at the end of the transmission on the traffic channel. Otherwise the radio unit shall send one codeword 708.

The time period between any two adjacent received codewords shall not exceed 2.2 seconds.

7.7.3 User cleardown on a traffic channel

The following series of tests checks that the radio unit behaves correctly when the user initiates a "call end request" with the RFCC in accordance with Sections 8.3.3 of MPT1343 and 9.2.3.5 of MPT1327.

7.7.3.1 Calling party cleardown

7.7.3.1.1 Test number

70704A

7.7.3.1.2 Purpose of test

To ensure that, when the call originating user initiates a "call end request" with the radio unit RFCC the radio unit transmits the required number of disconnect requests and returns to a control channel in accordance with 8.3.3 of MPT1343 and 9.2.3.5 of MPT1327.

7.7.3.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.3.1.4 Test method

The Tester shall cause the radio unit to attempt a simple speech call request to unit PFIX=39 IDENT=2079 (See Section 3.3). After receipt of codeword 503 (RQS) from the radio unit on channel 282 the General Test Assembly shall respond with codeword 205 (GTC) in accordance with 7.2.4 and 9.1.1.1 of MPT1327.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The Tester shall then use the RFCC on the radio unit to signal "call end request" in accordance with the manufacurer's instructions and the General Test Assembly shall monitor any transmissions by the radio unit on channel 309. Approximately 2 seconds after initiating the "call end request" the Tester shall cause the General Test Assembly to transmit codeword 601 (AHYC) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.7.3.1.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 205 (GTC).

When the "call end request" is initiated by the Tester the radio unit shall transmit codeword 712 (MAINT(OPER='011')) five times in the format specified in Section 3.3.2 of MPT1327 (as appropriate to a traffic channel) and shall indicate "call clear" in accordance with the manufacturer's information supplied and operation of the PTT shall no longer cause the radio unit to transmit.

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.3.2 Called party cleardown (group call)

7.7.3.2.1 Test number

70705A

7.7.3.2.2 Purpose of test

To ensure that, when a called radio user in a group call initiates a "call end request" with the radio unit RFCC, the radio unit does not transmit disconnect messages prior to returning to a control channel in accordance with Sections 8.3.3 of MPT1343 and 9.2.3.5 of MPT1327.

7.7.3.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.3.2.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword 206 within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The Tester shall then use the RFCC on the radio unit to signal "call end request" in accordance with the manufacturer's instructions and the General Test Assembly shall monitor any transmissions by the radio unit on channel 309.

Approximately 2 seconds after initiating the "call end request" the Tester shall cause the General Test Assembly to transmit codeword 601 (AHYC) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.7.3.2.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 206 (GTC).

When the "call end request" is initiated by the Tester the radio unit shall indicate "call clear" in accordance with the manufacturer's information supplied and operation of the PTT shall no longer cause the radio unit to transmit.

No disconnect messages shall be transmitted by the radio unit on channel 309 following initiation of "call end request" by the Tester.

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.3.3 Called party cleardown (individual call)

7.7.3.3.1 Test number

70706A

7.7.3.3.2 Purpose of test

To ensure that, when a called user in an individual call initiates a "call end request" with the radio unit RFCC, the radio unit transmits the required number of disconnect messages and returns to a control channel in accordance with Sections 8.3.3 of MPT1343 and 9.2.3.5 of MPT1327.

7.7.3.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.3.3.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The Tester shall then use the RFCC on the radio unit to signal "call end request" in accordance with the manufacturer's instructions and the General Test Assembly shall monitor any transmissions by the radio unit on channel 309.

Approximately 2 seconds after initiating the "call end request" the Tester shall cause the General Test Assembly to transmit codeword 601 (AHYC) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.7.3.3.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 201 (GTC).

When the "call end request" is initiated by the Tester the radio unit shall transmit codeword 712 (MAINT(OPER='011')) three times in the format specified in Section 3.3.2 of MPT1327 (as appropriate to a traffic channel) and shall indicate "call clear" in accordance with the manufacturer's information supplied and operation of the PTT shall no longer cause the radio unit to transmit.

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.4 Traffic channel timeouts

The following series of tests checks that the radio unit, whilst on a traffic channel, operates the timeouts specified in 9.2.3.6 of MPT1327.

7.7.4.1 Item duration timeout

7.7.4.1.1 Test number

70707A

7.7.4.1.2 Purpose of test

To ensure that, whilst on a traffic channel, the radio unit operates a timer following each Pressel On operation of the PTT and, in the event that a Pressel Off operation does not occur within a time period TT, ceases transmission and clears down from the traffic channel in accordance with Section 9.2.3.6 of MPT1327.

7.7.4.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.4.1.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 282.

Once the Tester has confirmed by observation the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit and, at the same time, initiate a timing device. The Tester shall keep the PTT depressed for a period in excess of 70 seconds.
The General Test Assembly shall monitor the return traffic channel for any messages received from the radio unit during the performance of the test.

When the General Test Assembly receives codeword 708 on the traffic channel from the radio unit the Tester shall stop the timing device and note the elapsed time.

Approximately 2 seconds after observing "call clear" indication from the radio unit (in accordance with the manufacturer's instructions) the Tester shall cause the General Test Assembly to transmit codeword 601 (AHYC) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.7.4.1.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 201 (GTC).

The radio unit shall transmit codeword 708 on the traffic channel within 54 to 66 seconds from the operation of the PTT, followed by codeword 712 three times. These messages shall be in the format specified in Section 3.3.2 of MPT1327 (as appropriate to a traffic channel).

The radio unit shall also indicate "call clear" in accordance with the manufacturer's information supplied and operation of the PTT shall no longer cause the radio unit to transmit.

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.4.2 Inactivity timeout

7.7.4.2.1 Test number

70708A

7.7.4.2.2 Purpose of test

To ensure that, if whilst receiving on a traffic channel the radio unit encounters any period of inactivity on the forward traffic channel in excess of TN, then the radio unit shall clear down from the traffic channel in accordance with Sections 9.2.3.6 of MPT1327 and 8.1.3.8 of MPT1343.

7.7.4.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.4.2.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The Tester shall then cause the General Test Assembly to cease to radiate the forward traffic channel on channel number 309, but to continue to monitor the return channel for any messages from the radio unit. The Tester shall initiate a timing device at the instant that radiation of the forward traffic channel ceases.

When the Tester observes the "call clear" indication from the radio unit (in accordance with the manufacturer's instructions) he shall stop the timing device and note the elapsed time.

Approximately 2 seconds after observing "call clear" indication from the radio unit the Tester shall cause the General Test Assembly to transmit codeword 601 (AHYC) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.7.4.2.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 201 (GTC).

The radio unit shall generate a "call clear" indication within 6.3 to 7.7 seconds of the instant that the traffic channel ceases to radiate and following this operation of the PTT shall no longer cause the radio unit to transmit.

No disconnect messages shall be transmitted by the radio unit on channel 309 following generation of "call end".

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.5 Disabling user transmission

The following series of tests checks that receipt of a MAINT(OPER='111')) message by the radio unit on a traffic channel results in the radio unit transmitter being disabled for any subsequent activity on that traffic channel in accordance with Section 9.2.3.3 of MPT1327.

7.7.5.1 Radio unit is called unit

7.7.5.1.1 Test number

70709A

7.7.5.1.2 Purpose of test

To ensure that, if whilst on a traffic channel the radio unit receives an applicable MAINT(OPER='111')) message, the radio unit transmitter shall be disabled for the remainder of its activity on the traffic channel in accordance with Section 9.2.3.3 of MPT1327.

7.7.5.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.5.1.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 201 with the value of CHAN set to '0011111100' within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall cause the General Test Assembly to transmit codeword 713 (MAINT(OPER='111')) on the forward traffic channel in the format specified in Section 3.3.1 of MPT1327 (as appropriate to a traffic channel). The Tester shall then operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any transmission by the radio unit during the performance of the test.

The Tester shall return the radio unit to the idle state on the control channel by signalling "call end request" with the RFCC in accordance with the manufacturer's instructions.

7.7.5.1.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 201 (GTC).

No transmissions shall be detected from the radio unit on the traffic channel throughout the test except for codeword 712 which shall be transmitted three times in the format specified in Section 3.3.1 of MPT1327 (as appropriate to a traffic channel) following initiation of "call end request" by the Tester.

7.7.5.2 Radio unit is calling unit (group call)

7.7.5.2.1 Test number

70710A

This test shall not be performed if the manufacturer has declared that the radio unit does not provide for the standard option to originate calls to group addresses (see Section 11.9 of MPT1343) or if the manufacturer has declared that the radio unit does not provide for the standard option to originate a simple call request (RQS) for a group call with FLAG1 set to '1' (i.e., broadcast calls, see Section 11.5.5.3.1.1 of MPT1343).

7.7.5.2.2 Purpose of test

To ensure that, if whilst on a traffic channel the radio unit receives a MAINT(OPER='111') message that is not applicable (due to the radio unit being the originator of a group call), then the radio unit transmitter shall not be disabled in accordance with Section 9.2.3.3 of MPT1327.

7.7.5.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.5.2.4 Test method

The Tester shall cause the radio unit to attempt a simple speech call request (broadcast mode) to group PFIX=39 IDENT=605 (see Section 3.3). After receipt of codeword 504 (RQS) from the radio unit on channel 282 the General Test Assembly shall respond with codeword 207 (GTC) in accordance with Sections 7.2.4 and 9.1.1.1 of MPT1327.

Once the Tester has confirmed by observation the GTC indication (in accordance with the manufacturers instructions) that the radio unit is active on the traffic channel he shall cause the General Test Assembly to transmit codeword 714 (MAINT(OPER='111')) on the forward traffic channel in the format specified in Section 3.3.1 of MPT1327 (as appropriate to a traffic channel).

The Tester shall then operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any transmissions by the radio unit during the performance of the test.

The Tester shall return the radio unit to the idle state on the control channel by signalling "call end request" with the RFCC in accordance with the manufacturer's instructions.

7.7.5.2.5 Radio unit response

The radio unit shall generate "GTC" indication, in accordance with the manufacturers information supplied, upon receipt of codeword 207 (GTC).

The radio unit shall transmit upon operation of the PTT control and cease to transmit when the PTT control is released. This transmission may include MAINT type codewords but these are not specified for the purposes of this test.

7.7.6 Network cleardown of radio units from a traffic channel

The following series of tests checks that the radio unit behaves correctly when it receives selective or general cleardown messages from the TSC on a traffic channel in accordance with Sections 9.2.3.7 and 9.2.3.8 of MPT1327.

7.7.6.1 Selective cleardown of unwanted unit

7.7.6.1.1 Test number

70711A

7.7.6.1.2 Purpose of test

To ensure that, if whilst on a traffic channel the radio unit receives a MAINT(OPER='110') message with an address not relating to the GTC message received which resulted in the radio unit acquiring a traffic channel, then the radio unit clears down from the traffic channel in accordance with Section 9.2.3.7 of MPT1327.

7.7.6.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.6.1.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 206 within the forward message stream on channel number 282.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any transmissions by the radio unit during the performance of the test.

Within 6 seconds of releasing the PTT control the Tester shall cause the General Test Assembly to transmit codeword 715 (MAINT(OPER='110')) with the value of IDENT1 set to 2048 on the forward traffic channel in the format specified in 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Approximately 2 seconds after the transmission of codeword 715 the Tester shall cause the General Test Assembly to transmit codeword 601 (AHYC) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.7.6.1.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 206 (GTC).

The radio unit shall transmit upon operation of the PTT control and cease to transmit when the PTT control is released. This transmission may include MAINT type codewords but these are not specified for the purposes of this test.

The radio unit shall indicate "call clear" in accordance with the manufacturer's information supplied in response to the receipt of codeword 715 and shall not transmit disconnect messages. Operations of the PTT shall no longer cause the radio unit to transmit .

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.6.2 Selective cleardown not actioned by wanted unit

7.7.6.2.1 Test number

70712A

7.7.6.2.2 Purpose of test

To ensure that, if whilst on a traffic channel the radio unit receives a MAINT(OPER='110') message with an address relating to the GTC message received which resulted in the radio unit acquiring a traffic channel, then the radio unit remains on the traffic channel in accordance with Section 9.2.3.7 of MPT1327.

7.7.6.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.6.2.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 206 within the forward message stream on channel number 282.

Once the Tester has confirmed by observation the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

Within 6 seconds of releasing the PTT control the Tester shall cause the General Test Assembly to transmit codeword 715 (MAINT(OPER='110')) with the value of IDENT1 set to 605 on the forward traffic channel in the format specified in Section 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Within 6 seconds of the transmission of codeword 715 the Tester shall again operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any transmissions by the radio unit during the performance of the test.

The Tester shall return the radio unit to the idle state on the control channel by signalling "call end request" with the RFCC in accordance with the manufacturer's instructions.

7.7.6.2.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 206 (GTC).

The radio unit shall transmit upon each operation of the PTT control and cease to transmit when the PTT control is released. This transmission may include MAINT type codewords but these are not specified for the purposes of this test.

7.7.6.3 General cleardown

7.7.6.3.1 Test number

70713A

7.7.6.3.2 Purpose of test

To ensure that, if whilst on a traffic channel the radio unit receives a valid CLEAR message, then the radio unit clears down from the traffic channel and acquires the control channel prescribed by the CONT field of the CLEAR message in accordance with Section 9.2.3.8 of MPT1327.

7.7.6.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.6.3.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 206 within the forward message stream on channel number 282.

Once the Tester has confirmed by observation the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The General Test Assembly shall monitor the return traffic channel for any transmissions by the radio unit during the performance of the test.

Within 6 seconds of releasing the PTT control the Tester shall cause the General Test Assembly to transmit codeword 702 (CLEAR) with the value of the CHAN field set to '0011111100' and the value of the CONT field set to '0011100001' on the forward traffic channel in the format specified in Section 3.3.1 of MPT1327 (as appropriate to a traffic channel).

Approximately 2 seconds after the transmission of codeword 702 the Tester shall cause the General Test Assembly to transmit codeword 601 (AHYC) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 601 in the slot immediately following.

7.7.6.3.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 206 (GTC).

The radio unit shall transmit upon operation of the PTT control and cease to transmit when the PTT control is released. This transmission may include MAINT type codewords but these are not specified for the purposes of this test.

Upon receipt of codeword 702 (CLEAR) the radio unit shall indicate "call clear" in accordance with the manufacturer's information supplied and shall not transmit disconnect messages. Operation of the PTT shall no longer cause the radio unit to transmit.

The radio unit shall respond to codeword 601 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.7 B personalisation tests

The following is a repeat of some of the tests in Sections 7.7.2 to 7.7.6 but with values specified appropriate to the B personalisation. Only those tests where the use of B personalisation parameters affect the radio unit behaviour in the tests (e.g., different timeout values) are repeated.

7.7.7.1 Item duration timeout

7.7.7.1.1 Test number

70707B

7.7.7.1.2 Purpose of test

To ensure that whilst on a traffic channel the radio unit operates a timer following each Pressel On operation of the PTT and, in the event that a Pressel Off operation does not occur within a time period TT, ceases transmission and clears down from the traffic channel in accordance with Section 9.2.3.6 of MPT1327.

7.7.7.1.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 281 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.7.1.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 281.

Once the Tester has confirmed by observation of the GTC indication (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit and, at the same time, initiate a timing device. The Tester shall keep the PTT depressed for a period in excess of 15 seconds.

The General Test Assembly shall monitor the return traffic channel for any messages received from the radio unit during the performance of the test.

When the General Test Assembly receives codeword 716 (MAINT(OPER='001')) on the traffic channel from the radio unit the Tester shall stop the timing device and note the elapsed time.

Approximately 2 seconds after observing "call clear" indication from the radio unit (in accordance with the manufacturer's instructions) the Tester shall cause the General Test Assembly to transmit codeword 603 (AHYC) within the message stream on the forward

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 204 (GTC).

The radio unit shall transmit codeword 716 (MAINT(OPER='001')) on the traffic channel within 9 to 11 seconds from the operation of the PTT, followed by codeword 717 (MAINT(OPER='011')) three times. These messages shall be in the format specified in Section 3.3.2 of MPT1327 (as appropriate to a traffic channel).

The radio unit shall also indicate "call clear" in accordance with the manufacturer's information supplied and operation of the PTT shall no longer cause the radio unit to transmit.

The radio unit shall respond to codeword 603 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.7.7.2 Inactivity timeout

7.7.7.2.1 Test number

70708B

7.7.7.2.2 Purpose of test

To ensure that, if whilst receiving on a traffic channel the radio unit encounters any period of inactivity on the forward traffic channel in excess of TN, then the radio unit shall clear down from the traffic channel in accordance with Sections 9.2.3.6 of MPT1327 and 8.1.3.8 of MPT1343.

7.7.7.2.3 Initialisation

The radio unit shall utilise the B personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 281 and a single traffic channel on channel number 309.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.7.7.2.4 Test method

The Tester shall use the General Test Assembly to send GTC codeword number 204 with the value of the CHAN field set to '0011111100' within the forward message stream on channel number 281.

Once the Tester has confirmed by observation of the GTC indication 107 (in accordance with the manufacturer's instructions) that the radio unit is active on the traffic channel he shall operate the PTT control on the radio unit, keeping the PTT operated for a period of between 5 and 10 seconds, and then release the PTT control.

The Tester shall then cause the General Test Assembly to cease to radiate the forward traffic channel on channel number 309, but to continue to monitor the return channel for any messages from the radio unit. The Tester shall initiate a timing device at the instant that radiation of the forward traffic channel ceases.

When the Tester observes the "call clear" indication from the radio unit (in accordance with the manufacturer's instructions) he shall stop the timing device and note the elapsed time.

Approximately 2 seconds after observing "call clear" indication from the radio unit the Tester shall cause the General Test Assembly to transmit codeword 603 (AHYC) within the message stream on the forward control channel 281 and shall monitor the return channel for a response from the radio unit to codeword 603 in the slot immediately following.

7.7.7.2.5 Radio unit response

The radio unit shall generate GTC indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 204 (GTC).

The radio unit shall generate a "call clear" indication within 2.7 to 3.3 seconds of the instant that the traffic channel ceases to radiate and following this operation of the PTT shall no longer cause the radio unit to transmit.

No disconnect messages shall be transmitted by the radio unit on channel 309 following generation of "call end".

The radio unit shall respond to codeword 603 (AHYC) with codeword 801 (SAMIS) in the correct response slot.

7.8 System Parameter Calls

(Not included in this issue).

7.9 Emergency Calls

(Not included in this issue).

7.10 Call Cancellation

7.10.1 General

The tests in this section are designed to check the correct operation of the radio unit when call set up is aborted prior to a traffic channel being allocated. The necessary radio unit behaviour is described in Sections 9 and 13 of MPT1327. The tests in this section cover the following:

a) Call cancellation by the calling user,

b) incoming call reject by the called user,

c) call cancellation by the called user after initial acceptance.

The General Test Assembly is required for this series of tests to generate one simulated control channel on a fixed frequency.

The tests cover operation of the radio unit with the A personalisation only.

7.10.2 Test procedures

7.10.2.1 Calling user cancels call

7.10.2.1.1 Test number

71001A

7.10.2.1.2 Purpose of test

To ensure that, when the calling user initiates a call set-up abort prior to allocation of a traffic channel, the calling radio unit terminates call set-up in accordance with the procedures specified in Sections 9.2.1.7 of MPT1327 and 8.1 and 8.3.3 of MPT1343.

7.10.2.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.10.2.1.4 Test method

The Tester shall cause the radio unit to attempt a simple speech call request to unit PFIX=39 IDENT=2079 (see 3.3). After receipt of codeword 503 (RQS) from the radio unit on channel 282 the General Test Assembly shall respond with codeword 409 (ACKI(QUAL='1')) in accordance with Sections 7.2.4 and 9.1.1.1 of MPT1327.

The Tester shall then use the radio unit RFCC to initiate "call set-up abort" in accordance with the manufacturer's instructions.

The General Test Assembly shall monitor the return control channel for any transmissions by the radio unit and shall respond to codeword 505 (RQX) from the radio unit with codeword 410 (ACK(QUAL='1')) in accordance with Sections 7.2.4 and 9.1.1.1 of MPT1327.

7.10.2.1.5 Radio unit response

The radio unit shall respond to the simple speech call request by generating "CSUIP (Calling)" indication in accordance with the manufacturer's information supplied and shall transmit codeword 503 (RQS) on the return control channel.

The radio unit shall not change its indication state nor make any transmissions in response to codeword 409 (ACKI(QUAL='1')).

When the Tester initiates "call set-up abort" the radio unit shall transmit codeword 505 (RQX) on the return control channel.

Upon receipt of codeword 410 (ACK(QUAL='1')) the radio unit shall cease "call set-up in progress" indication.

7.10.2.2 Called user rejects call (prior to going off-hook)

7.10.2.2.1 Test number

71002A

This test shall not be peformed if the manufacturer has declared that the radio unit does not provide for the standard option "incoming call reject" (see Sections 8.3.3 of MPT1343 and 13.1.2.1 of MPT1327).

7.10.2.2.2 Purpose of test

To ensure that, when the called user initiates an "incoming call reject" in response to an incoming call, the called radio unit terminates call set-up in accordance with the procedures specified in Sections 13.1.2.1 of MPT1327 and 8.1 and 8.3.3 of MPT1343.

7.10.2.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.10.2.2.4 Test method

The Tester shall cause the General Test Assembly to transmit codeword 609 (AHY) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 609 in the slot immediately following.

Once the Tester has observed the radio unit "alert" indication (in accordance with the manufacturer's instructions) he shall initiate "incoming call reject" in accordance with the manufacturer's instructions.

The General Test Assembly shall monitor the return control channel for any transmissions by the radio unit.

The General Test Assembly shall respond to any transmissions of codeword 506 (RQQ) from the radio unit with codeword 411 (ACK(QUAL='0')) in accordance with Sections 7.2.4 and 13.1.1.1 of MPT1327.

The Tester shall observe any change in radio unit indications subsequent to the initiation of the "incoming call reject".

7.10.2.2.5 Radio unit response

The radio unit shall generate "alert" indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 609 (AHY) and shall respond to codeword 609 with codeword 415 (ACKI(QUAL='0')) in the correct response slot.

When the "incoming call reject" is initiated by the Tester the radio unit shall transmit codeword 506 (RQQ) with the value of the STATUS field set to '11111' in accordance with Section 7.3.4 of MPT1327.

Upon receipt of codeword 411 (ACK(QUAL='0')) by the radio unit it shall cease the "alert" indication.

7.10.2.3 Called user rejects call (after going off-hook)

7.10.2.3.1 Test number

71003A

This test shall not be performed if the manufacturer has declared that the radio unit does not provide for the standard option "cancel called party answer" (See Sections 8.3.3 of MPT1343 and 13.1.2.1 of MPT1327).

7.10.2.3.2 Purpose of test

To ensure that, when the called user initiates an "cancel called party answer" in response to an incoming call, the called radio unit terminates call set-up in accordance with the procedures specified in Sections 13.1.2.1 of MPT1327 and 8.1 and 8.3.3 of MPT1343.

7.10.2.3.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.10.2.3.4 Test method

The Tester shall cause the General Test Assembly to transmit codeword 609 (AHY) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 609 in the slot immediately following.

Once the Tester has observed the radio unit "alert" indication (in accordance with the manufacturer's instructions) he shall initiate "called party answer" in accordance with the manufacturer's instructions.

The General Test Assembly shall monitor the return control channel throughout the test for any transmissions by the radio unit.

The General Test Assembly shall respond to any transmissions of codeword 506 (RQQ) from the radio unit with codeword 411 (ACK(QUAL='0')) in accordance with Sections 7.2.4 and 13.1.1.1 of MPT1327.

Once the General Test Assembly has transmitted codeword 411 the Tester shall initiate "cancel called party answer" in accordance with the manufacturer's instructions.

The General Tests Assembly shall respond to any further transmissions of codeword 506 (RQQ) from the radio unit with codeword 411 (ACK(QUAL='0')) in accordance with Sections 7.2.4 and 13.1.1.1 of MPT1327.

7.10.2.3.5 Radio unit response

The radio unit shall generate "alert" indication, in accordance with the manufacturer's information supplied, upon receipt of codeword 609 (AHY) and shall respond to codeword 609 with codeword 415 (ACKI(QUAL='0')) in the correct response slot.

When the "called party answer" is initiated by the Tester the radio unit shall transmit codeword 506 (RQQ) with the value of the STATUS field set to '00000' and shall replace the "alert" indication by "CSUIP (called)" indication in accordance with the manufacturer's information supplied.

When the "cancel called party answer" is initiated by the Tester the radio unit shall transmit codeword 506 (RQQ) with the value of the status field set to '11111' in accordance with Section 7.3.4 of MPT 1327.

Upon receipt of codeword 411 (ACK_I(QUAL='0')) by the radio unit it shall cease the "CSUIP (called)" indication.

7.11 Call Back (ACKB)

7.11.1 General

The tests in the section are designed to check the correct implementation of the call back procedures specified in Sections 9.2.1.4 and 9.2.2.2 of MPT1327.

All radio units are required to respond correctly to receipt of ACKB in response to a call request as prescribed in Section 9.2.14 of MPT1327. In addition units may, as a standard option, respond to an incoming call request with ACKB in which case they shall conform to Section 9.2.2.2 of MPT1327.

The General Test Assembly is required for this series of tests to generate one simulated control channel on a fixed frequency.

The tests cover operation of the radio unit with the A personalisation only.

7.11.2 Test procedures

7.11.2.1 Response to a call request

7.11.2.1.1 Test number

71101A

7.11.2.1.2 Purpose of test

To ensure that a radio unit receiving a call back acknowledgement (ACKB) in response to a call request terminates call set-up in accordance with the procedures specified in 9.2.1.4 of MPT1327.

7.11.2.1.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.11.2.1.4 Test method

The Tester shall cause the radio unit to attempt a simple speech call request to unit PFIX=39 IDENT=2079 (See Section 3.3). After receipt of codeword 503 (RQS) from the radio unit on channel 282 the General Test Assembly shall respond with codeword 409 (ACKI(QUAL='1')) in accordance with Sections 7.2.4 and 9.1.1.1 of MPT1327.

The Tester shall then cause the General Test Assembly to transmit codeword 404 (ACKB(QUAL='0')) within the forward message stream on channel number 282.

The Tester shall observe the confidence indications generated by the radio unit throughout the test.

7.11.2.1.5 Radio unit response

The radio unit shall respond to the simple speech call request by generating "CSUIP (Calling)" indication in accordance with the manufacturer's information supplied and shall transmit codeword 503 (RQS) on the return control channel.

The radio unit shall not change its indication state nor make any transmissions in response to codeword 409 (ACKI(QUAL='1')).

Upon receipt of codeword 404 (ACKB(QUAL='0')) the radio unit shall cease to generate "CSUIP (calling)" indication and shall generate "transaction confirmed" indication in accordance with the manufacturer's information supplied.

7.11.2.2 Response to an incoming call

7.11.2.2.1 Test number

71102A

This test shall not be performed if the manufacturer has declared that the radio unit does not provide for the standard option to accept calls for call back (See Sections 9.2.2.2 of MPT1327 and 11.9.2.2.2 of MPT1343).

7.11.2.2.2 Purpose of test

To ensure that, when a radio unit accepts an incoming call request for subsequent call back, it conforms to the procedures specified in Section 9.2.2.2 of MPT1327.

7.11.2.2.3 Initialisation

The radio unit shall utilise the A personalisation. The Tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 282.

The radio unit shall be in the idle state on the control channel immediately prior to the test.

7.11.2.2.4 Test method

The Tester shall configure the radio unit under test such that it will accept calls for call back in accordance with the manufacturer's instructions (Section 3.4).

The Tester shall cause the General Test Assembly to transmit codeword 609 (AHY) within the message stream on the forward control channel 282 and shall monitor the return channel for a response from the radio unit to codeword 609 in the slot immediately following.

The Tester shall observe the confidence indications generated by the radio unit throughout the test.

7.11.2.2.5 Radio unit response

The radio unit shall respond to codeword 609 (AHY) with codeword 412 (ACKB(QUAL='0')) in the correct response slot.

The radio units shall indicate that it has accepted a call for call back in accordance with the manufacturer's instructions.

7.12 Call Include

(Not included in this issue).

7.13 Call Diversion

(Not included in this issue).

7.14 RQC Calls

(Not included in this issue).

7.15 Generic Status Calls

7.16 Time-Shared Tests

7.16.1 Acquisition of a Time-Shared Control Channel

7.16.1.1 Test Number

71601E

7.16.1.2 Purpose of Test

To establish that the radio unit acquires a time-shared control channel.

7.16.1.3 Initialisation

The radio unit shall utilise the E personalisation.

The tester shall connect the radio unit to the General Test Assembly, which shall be radiating a continuous control channel on channel number 286.

The tester shall cause the General Test Assembly to radiate a discontinuous control channel on channel number 58. The level of this control channel shall be set to give a nominal value at the receiver of -103dBm to ensure that the radio unit carries out a pre-confirmation error check. This control channel shall consist of a burst of carrier modulated by message 913. Each burst shall be separated with a gap equivalent to 49 codewords during which the General Test Assembly shall cease radiation. The tester shall ensure that no bit or codeword synchronisation exists within the gap

The radio unit shall be in the idle state on control channel 286.

7.16.1.4 Method

The tester shall switch off control channel 286 and switch on discontinuous control channel 58.

The General Test Assembly shall monitor the return control channel 58 for codeword 501, from the radio unit, which shall be received within 20 seconds. Upon receipt of codeword 501 from the radio unit, the General Test Assembly shall respond with codeword 401 in accordance with 7.2.4. and 8.2.1. of MPT 1327.

7.16.1.5. Radio Unit Response

The correct acquisition of the control channel shall be confirmed by receipt of codeword 501 and by the "in service" indication on the radio unit (if so equipped).

7.16.2 Retention of a Time-Shared Control Channel

7.16.2.1 Test Number

71602E

7.16.2.2 Purpose of Test

To establish that the radio until retains a time-shared control channel without losing codeword synchronisation during a burst.

7.16.2.3 Initialisation

The radio unit shall utilise the E personalisation and shall have successfully completed test 71601E.

The Tester shall connect the radio unit to the General Test Assembly, which shall be radiating a discontinuous control channel on channel number 58.

The discontinuous channel shall consist of bursts of carrier modulated with message 914. Each message shall be separated with a gap equivalent to 49 codewords during which the GTA shall cease radiation. The tester shall ensure that no codeword synchronisation exists between successive bursts

7.16.2.4 Method

Message 914 shall be repeated 100 times. The General Test Assembly shall monitor the return control channel for codeword 801 from the radio unit.

7.16.2.5 Radio Unit Response

The radio unit shall respond with codeword 801 to 95% of all transmissions of codeword 601, and shall have a continuous "in service" indication (if so equipped).

8. CHECK FOR PERSONALITY CHANGE

A check for personality change is not included in this issue.

9. RADIO UNIT PERFORMANCE TESTS

The following tests are to be performed by the manufacturer of the radio unit. No limits have been specified as the purpose of the tests is to provide information to a network operator for the purposes of service area classification.

9.1 Traffic Channel Sensitivity

9.1.1 Test Numbers

90101C
90102C
90103C

9.1.2 Purpose of Test

To measure the minimum signal level of which a SINAD measurement of 12dB (unweighted) is obtained from the audio output of the radio unit receiver if the mute is open at the required signal level of the level at which the mute opens if higher.

9.1.3 Initialisation

The radio unit shall use the C personalisation. The tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel on channel number 286. The radio unit shall be idle on this control channel immediately prior to the test.

9.1.4 Test Method

At the appropriate time in each test the tester shall cause the General Test Assembly to radiate the following traffic channels at a level of -100dBm, modulated by 1000 Hz tone at a level to give a peak deviation of 60% of maximum permitted frequency deviation, in each named test:

TEST	CHAN FIELD for sub-band 1	CHAN FIELD for sub-band 2	CHANNEL NUMBER
90101C	'1011000010'	'0011000010'	251
90102C	'1000000001'	'0000000001'	58
90103C	'1111110111'	'0111110111'	560

The tester shall cause the General Test Assembly to generate codeword 208 with CHAN set to the value appropriate to each test as listed above. When the tester hears tone in the radio unit loudspeaker he shall set the audio power output to 50% of the manufacturer's declared maximum output. He shall then reduce the signal until the receiver mute closes and then immediately increase the signal strength to re-open the mute. The tester shall then measure SINAD and, if necessary, increase the signal strength until SINAD is 12 dB. The r.f. signal level at this point shall be recorded. At the end of each test the tester shall clear the radio unit from the traffic channel by means of the front panel controls.

9.1.5 Limits

None.

9.2 Control Channel Acquisition Speed

9.2.1 Test Numbers

90201C

9.2.2 Purpose of Test

To obtain a measure of the time required to confirm the control channel successfully.

9.2.3 Initialisation

The radio unit shall utilise the C personalisation. The tester shall connect the radio unit to the General Test Assembly which shall be radiating one active (Active 1) and two dummy forward control channels. A further active control channel (Active 2) shall be radiated during periods of the test. On each of the control channels, the system codeword shall be codeword 102 with SYS and CCS set as indicated:

	Channel No	SYS	CCS		Signal Level
Active 1	286	'101010110100010'	'0010111011010010'	-	109dBm
Active 2	286	'101010110100100'	'1011111001010000'	-	109dBm
Dummy 1	107	'100010100111001'	'0011001011100110'	-	85dBm
Dummy 2	377	'100101011000001'	'1110101101001001'	-	85dBm

The radio unit shall be in the idle state on the active channel immediately prior to the commencement of the test.

9.2.4 Test Method

Cease radiating the Active 1 forward control channel for a period of 15 seconds. Radiate the Active 2 forward control channel. Note the time between the commencement of the radiation of the Active 2 forward control channel and the first transmission by the radio unit of codeword 501. The General Test Assembly shall respond to each transmission of codeword 501 with codeword 401 in accordance with 7.2.4. and 8.2.1. of MPT 1327. Repeat the test a further 9 times noting the results.

Record the mean of the noted times.

9.3 Control Channel Data Decode Sensitivity

9.3.1 Test Numbers

90301D
90302D
90303D

9.3.2 Purpose of the Test

To measure the minimum increasing signal level at which the radio unit can successfully confirm a control channel.

9.3.3 Initialisation

At the appropriate time in each test the tester shall cause the General Test Assembly to radiate the following forward control channels in each named test:

Test No:	90301D	Channel number 286
Test No:	90302D	Channel number 58
Test No:	90303D	Channel number 560

The radio unit shall utilise the D personalisation. The tester shall connect the radio unit to the General Test Assembly which shall be radiating a single forward control channel at a level of -100dBm on the designated channel number. The radio unit shall be in the idle state on this control channel immediately prior to this test.

9.3.4 Test Method

The tester shall cause the General Test Assembly to generate codeword number 606 to obtain a response from the radio unit. When the radio unit responds to codeword 606 the tester will then reduce signal strength of the radiated forward control channel in 5dB steps. At each step the tester shall send up to 10 off codeword 606 until the radio unit responds. When the radio unit fails to respond to all 10 codewords the tester shall reduce the signal further 10dB and repeat the test whilst increasing the signal strength in 1 dB steps. For each step the tester shall dwell for at least the period given in the result of test 90301C for this radio unit, prior to causing the General Test Assembly to generate codeword 606. The test continues until the unit responds to at least 5 off codeword 606 out of the 10 which are sent at which point the tester shall record the strength of the signal being sent into the radio unit from the General Test Assembly.

9.3.5 Radio Unit Response

The radio unit shall respond to codeword 606 with codeword 407 during the time that it is confirmed on the forward control channel.

9.3.6 Limits

None.